

FEBRUARY 1922 - No. 193

Monthly

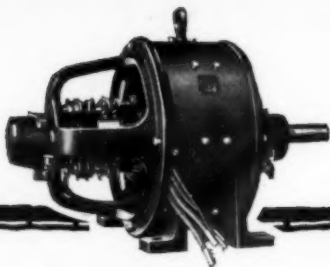
A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

FOR INDEXES SEE LAST PAGES



Try a Type T Reliance Motor on a tough job

That's what they are built for. They are made to stand hard usage and to stand it longer than the ordinary motor. More and better material is put into vital parts. Coils are carefully insulated, shafts and bearings are large, end brackets are heavy. Commutators include special details that mean longer life.

Type T motors in installations of 1 to 300 have been making good for over five years doing hard jobs in steel mills, and metal working shops.

Let us send Bulletin 2014 which shows why these motors will do more than meet ordinary needs.

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, O.

Branches:

BOSTON, NEW YORK, PHILADELPHIA, PITTSBURGH,
CINCINNATI, DETROIT, CHICAGO

We specialize in motors, sizes 1/2 to 150 h. p., constant and adjustable speed D. C.; squirrel cage and slip ring A. C.

Type **T** *Heavy Duty*
RELIANCE MOTORS
Direct Current



A Skilled Artisan—

'Scraping in' the bed of an Acme Multiple Spindle Automatic to insure a precise bearing for the turret slide requires the attention of a skilled mechanic—one whose technique has been acquired through years of experience.

Yet, this is but one of the many thorough practices in assembling these multiples that guarantee their accurate, speedy and continuous performance in production.

Built in capacities up to 4-in. diam.

THE NATIONAL ACME COMPANY CLEVELAND, OHIO

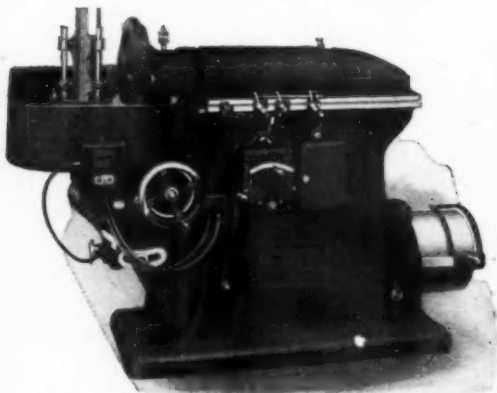
NEW YORK BOSTON CHICAGO DETROIT BUFFALO

New England Plant: Windsor, Vermont

Canadian Screw Plant: Montreal, P. Q.

An Automatic Ring Grinder

The Latest Heald Product



It is of entirely new design, exceedingly rugged and built especially for large production.

It has an automatic feeding device (on which we hold the basic patents) making it only necessary to load the magazine and take away the finished work, such as ring ball, races, collars, washers, etc.

The slide is driven by an exceedingly simple hydraulic arrangement operated by oil, enabling the operator to instantly get any speed from nothing up to the maximum. This drive makes it possible to reverse the table instantly at any desired point without shock or noise.

The machine is also furnished without feeding arrangement with 8", 12" and 16" magnetic chucks for use on regular surface grinding work.

The Heald Machine Co.
6 New Bond St., Worcester, Mass.

R-S Collapsible Taps

Produced by
R-S Experts

This modern tool makes good in every shop that gives it a try-out. It's the ripe product of careful and exhaustive experimenting by our corps of experts, and we recommend it to all users as being on a par with the now famous R-S (Boehm) Automatic Die Head.



A collapsing tap is more efficient than the solid kind, and the R-S is *positive* in action, so that it *cannot fail*. You can withdraw the chasers at any time because its action does not depend on springs or similar contrivances. The capacity is for 1 in. and up.

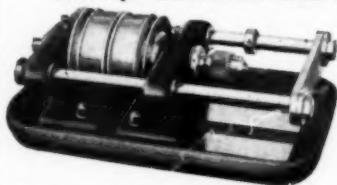
Write for Circular giving full details and interesting information

Rickert-Shafer Co.

1110 Cherry St., Erie, Pa.

Whitney Friction Driven No. 1 Tapping Machine

Saves Taps—Insures Perfect Threads and Holes



**Capacity
Up to $\frac{1}{4}$ "**

**Weight
85 lbs.**

Friction drive and reverse—very sensitive. Ball bearing end thrust. Saves taps, gives perfect results, and its quick and easy control insures maximum output. Complete with countershaft, Jacobs chuck and cross bar for holding work fitted to your job. Special fixtures on order. Write for prices.

Whitney Metal Tool Co.
109-111 Forbes Street, Rockford, Ill.

Business—

is like riding a bicycle—we can keep from falling if we keep moving; only a few trick riders can stand still and not tumble.

Toledo Taps

will assist you to maintain your equilibrium.

Toledo Precision Taps Stand Alone

The Toledo Tap & Die Co.

Toledo, Ohio

Chicago Office: 810 W. Lake St., Chicago, Ill.



**Half the
Turns
Half the
Pressure
Better
Results**

Try A

Jacobs Super Chuck

You'll Thank Us For Suggesting It

If you don't say it is the best drill chuck you ever saw, the dealer will return your money. It is easier to handle, quicker, has a surer hold on the drill. It is a better—A SUPER—Jacobs, and you know how good the old reliable Jacobs has always been.

See your dealer—or write us

The Jacobs Manufacturing Co.
2074 Park Road, HARTFORD, CONN.

Thor Portable Electric Drills

**For Drilling, Reaming, Wood Boring
and Screw Driving**

New 16-Page Book Showing Complete Line Free

Jacobs
Chucks
Regular
Equipment



Agents Wanted

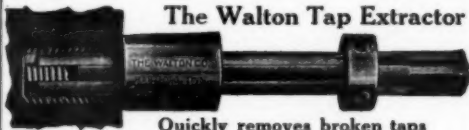
**Independent Pneumatic
Tool Company**

600 West Jackson Blvd., CHICAGO

Offices and Agents Everywhere

Why Not Laugh At Tap Breakage?

The Walton Tap Extractor



Quickly removes broken taps

Of all the minor shop accidents, that of taps breaking at or below the surface is one of the most troublesome, on account of its comparative frequency, with loss of time and often injury to the work.

Why not order a Walton Extractor NOW and laugh at tap breakage? Once used, it becomes indispensable. It pays for itself over and over again—often the first time used.

Sizes No. 8 to 1 1/4". Let us describe and quote.

THE WALTON CO., Hartford, Conn.



**Watch The Corners
Dollars Saved—Dollars Made**

Squeeze Your \$ Of Cost

Get An *Avey* Get all the Profit

**Drive To The Limit
Double Production—Half the Labor**

**The Avey Drilling Machine Co.
Cincinnati, Ohio**

Bicknell-Thomas Friction Driven Vertical Tapping Machine

It taps to the bottom of blind holes without danger of breaking tap. The elimination of all shock when reversing also saves taps and increases output. It is easy to operate, sensitive and highly productive. Capacity, 0 to $3/16$ " taps.

We also make Plain Horizontal Bench Tappers in two sizes, with capacities of 0 to $3/16$ " and $3/16$ " to $3/8$ ". They are high-grade machines, sold at a low figure.

*Write for specifications
and the moderate price*



Bicknell-Thomas Company
90 Wells Street, Greenfield, Mass.

Eliminate Tap Breakage

Many a tapping job has been a regular tap breaker until the operator tried out a

Woodstock Improved No-Tap-Breakage Chuck

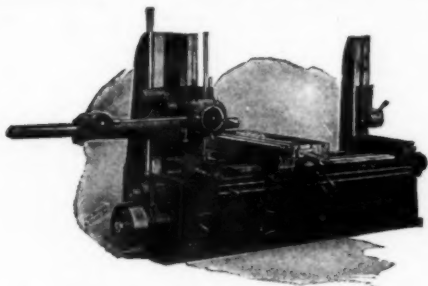


* As soon as this chuck was employed, tap troubles were over. This chuck automatically releases tap the minute it binds or strikes bottom. It will enable you to utilize about 99% of the strength of the tap without breaking it. It can be used with any automatic reverse, reversible drill press, tapping machine or lathe.

Write for details and trial offer

Peter Bros. Mfg. Co., 115 Railroad St.,
ALGONQUIN, ILL.

High Quality and Unusual Efficiency—*that's the Lambert*



**A Horizontal Boring, Milling and Drilling Machine
that's as Accurate as Human Skill and
Ingenuity can make it**

You will like and profit by its great simplicity and the exceptional convenience of operation. The Lambert has two adjustable start-and-stop levers which slide along the horizontal bars—one starts, stops or reverses any feed, and the other starts or stops the bar. Bronze bushings and all-steel gearing. Verniers for making head and outer support adjustments. Arranged for motor drive on order.

The Complete Specifications

are interesting and instructive. Glad to mail them to you, as we're sure you will be glad to read them. Let's have your name and address today.

Carroll Foundry & Machine Tool Co.
Bucyrus, Ohio, U. S. A.

Also Belt Driven



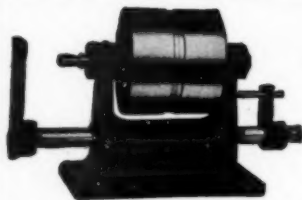
**Burke 10"
Bench Drill
Motor Driven**

Extremely accurate,
very sensitive and of
Burke Quality.
Has double flanged
top cone mounted
on large bearing
through which
spindle runs. Spin-
dle thrust taken on
a ball bearing.

*Worth more than
it costs. Write for
full information*

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio

Send Samples



**or Drawings
of your Tapping
Jobs and let
us give you
Production
Estimate**

Burke Friction Driven Tapping Machines eliminate all shock
to the tap, and for this reason stop 95% of your tap breakage.

Look into your scrap bin and figure up your losses in broken
taps and imperfectly tapped work and see what you can save by
installing Burke Equipment.

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio



THE SIPP QUICK-CHANGE-SPEED SENSITIVE DRILL PRESS IS DIFFERENT

Speed can be changed in two seconds.
Belt troubles are eliminated.
You get highest belt efficiency.
Belts can be changed in ten seconds.
It is extremely rigid.
It is very sensitive.
The spindle always runs in perfect balance.
It is a Safety First drill.
Let us tell you more about it.

The Sipp Machine Company
Keen Street, PATERSON, N. J.

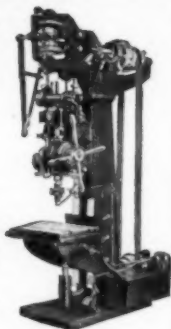
What the Turret Lathe is
to the Common Lathe, the

Turner Turret

is to the Drill Press

Regularly built with 4 to 6 spindles, also to order. Each spindle carries a different tool, which successively and automatically registers in precisely the same position. A tremendous cost reducer.

*Write for Bulletin FH
and send sketch of your work*



Turner Machine Company
DANBURY, CONN.

Reduce Drilling Costs

"The Milwaukee Way"

This is a good time to bring your drilling equipment up to the highest efficiency.

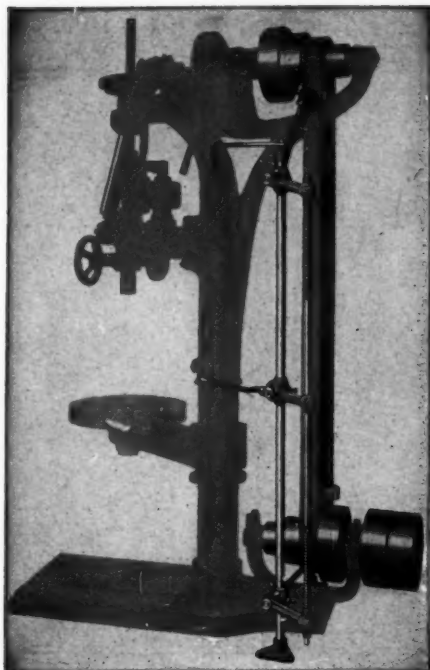
Milwaukee Drill Presses 28", 24", 21" and 14"

are unsurpassed in convenience, productiveness and economy. "The Milwaukee Way" of drilling means lowest costs every time, and Milwaukee Drills are so handy.

Why wait? Write today to—



RICHARDS MACHINE CO., 3417-23 Vliet Street,
MILWAUKEE, WIS.



Instant changes of speed for
drill presses increase production
and reduce compensation to injured
employees.

Details in Circular H-D

The Kremer-Cummins Machine Company
1833-35 East 55th St., Cleveland, Ohio

COLLIS

JUST ANOTHER WAY OF SAYING

QUALITY—ACCURACY—SERVICE



No. 100-D Standard Type Sleeve



No. 100 Use-Em-Up Type Sleeve

STANDARD AND USE-EM-UP TYPES DRILL SLEEVES AND SOCKETS

CHUCK ARBORS
LATHE CENTERS
LATHE BUSHINGS

LATHE SOCKETS
HANDLED SOCKETS
DRILL DRIFTS

SQUARE TAPER SOCKETS
B & S TAPER SOCKETS
SPECIAL TOOLS

"WONDER" QUICK CHANGE DRILL CHUCK

Your Jobber Handles Collis Quality Tools

THE COLLIS COMPANY, MANUFACTURERS, CLINTON, IOWA

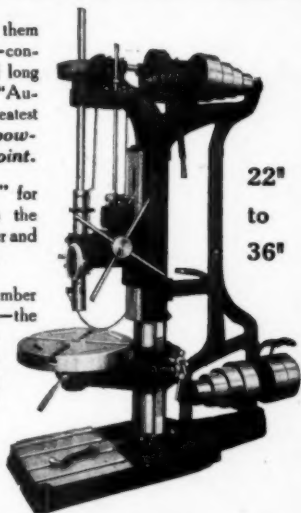
Experts Confirm Our Claims

Users—and among them are many experts—confirm our claim of long standing that the "Aurora" has the greatest pulling capacity, or *power at the drill point*.

The "reason why" for this superiority is the large pulley diameter and the ratio of gearing.

There are also a number of special features—the money saving kind—that are especially interesting during these days of readjustment.

For extraordinary drill value consult our Catalog today

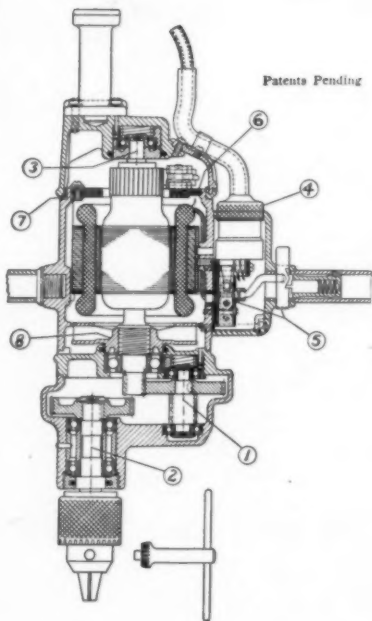


DRILLING TESTS OF 24" AND 26" DRILL

Size of Hole	Spindle Speed	Feed per Minute	MATERIAL
1"	360	9½"	Cast Iron
1"	360	6½"	Mild Steel
1½"	350	6½"	Mild Steel
1½"	350	9"	Cast Iron
1¾"	225	5½"	Mild Steel
2"	225	6½"	Cast Iron

The Aurora Tool Works
Aurora, Indiana, U. S. A.

New Hisey SUPER



Patents Pending

POWER
this in
spare
stock po
manufac
experien

Equipped
factured
ting cost
capacity.

Mechanic
grade as o

1. Ball
2. Ball
3. Ball
4. Quick
5. Famp

A high grad
ditions. TH
and a guar
represents b
3/8" and 1/2"

THE HISEY-WOLF MACHINE

AGENTS IN ALL

PER Universal Drills

is very essential, and there is an abundance of the new Hisey Super Universal Drill, and some to it is not an assembled machine with an ordinary motor, but a product scientifically designed and by an organization with twenty-two (22) years' experience.

with Super motor of our own design and manufacture, guaranteed to do more work at a lower operating cost (less current consumption) than any drill of same rated capacity.

construction of Hisey machine is of the highest quality, as can be seen from sectional drawing.

- | | |
|------------------------------|--|
| Ball Bearing Gear Spindle | 6. Adjustable brush holder yoke |
| Ball Bearing Chuck Spindle | 7. Improved vent openings, safeguard the motor and interior parts against accidental and willful abuse |
| Ball Bearing Motor Shaft | 8. Improved ventilating fan |
| Quick Release Connector | |
| Famous Hisey Patented Switch | |

product built to meet the most trying and exacting conditions. Installation of a new Hisey Super Drill is a real investment, free to your satisfaction; is the best proof that the first cost is a meager portion of real economy.

Drills can now be shipped from stock.

CHINE CO., Cincinnati, Ohio

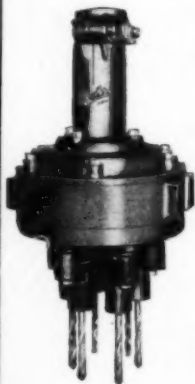
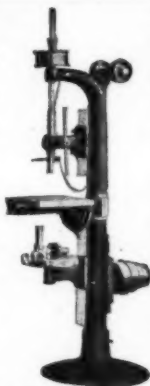
PRINCIPAL CITIES

A Lot of Drilling Capacity—

This 16-inch, No. 7 Barr is a sturdy, reliable, highly efficient sensitive that will give you more service and satisfaction than you have ever bought for so small a sum. Takes drills up to $\frac{3}{4}$ -inch, and handles them effectively. It gets results.

Let us have your address for complete description.

FRANCIS REED CO., 43 Hammond St., Worcester, Mass.



The Buhr Multiple Spindle Drill Head

The arms can be rotated or moved in and out, and set-ups made for circular, rectangular or staggered positions.

Saves time — saves money — insures absolute duplication of pattern.

Also Fixed Spindle Drill Heads, both bronze and ball bearing.

Tell us what your work is and we'll tell you what we can do

Nelson-Blanck Mfg. Co.
DETROIT, MICH.

New York Office: 50 Church St.

MAKE A— Multiple Spindle Drill

Out of your Single Spindle Drill Press



with a
**U. S.
Multiple
Spindle
Drill
Head**

Attach a U. S. Multiple Spindle Drill Head to your single spindle drill press, and drill several holes at a time with the same speeds and feeds that are used for drilling one.

Made with 2 to 6 adjustable spindles, with a patented double adjustment which permits drilling in any pattern—squares, triangles, rectangles, ovals, straight line or staggered.

Also made with fixed spindles for the rapid and economical duplication of fixed layouts.

*A big economy at a very moderate cost
Tell us what your work is, for time and cost estimate*

The United States Drill Head Co.
Cincinnati, Ohio, U. S. A.



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

GITS BROS. MFG. CO
1940 SO. KILBOURN AVE., CHICAGO



Style "H"

One Style—Three Sizes—One Price
1/4 inch Mostly Used

GENSCO

100  1/4

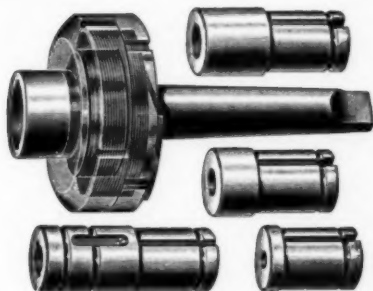
OIL HOLE

COVERS

GENERAL SCREW COMPANY
CINCINNATI, OHIO, U.S.A.

Net Prices the Hundred
5/32-\$3.25 1/4-\$3.50 5/16-\$3.75

The SAFETY Drill and Tap Holder Insures Long Life to Taps



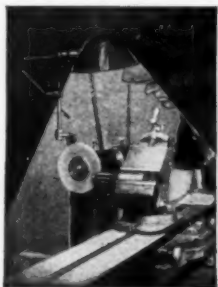
The Safety—friction driven—Tap Holder puts within easy reach of every shop a really worth while economy. Tap breakage is *prevented*, and this means you save not only the cost of new taps, but cut out the expense of labor involved in removing broken ones and the consequent delay of the job in hand.

The Safety permits tapping to the bottom, and enables you to change from drilling to tapping and vice versa without stopping spindle. In case of any undue strain, the Holder will instantly stop, while spindle continues revolving. This eliminates all tap breakage.

Regularly made in four sizes, 0 to 2½", but can be furnished with special sockets with friction set to carry one or two sizes of taps, which are especially useful where sizes are constantly changing.

Seeing is believing—try one out on your toughest tapping job and be convinced

The Beaman & Smith Co.
PROVIDENCE, RHODE ISLAND



SAVE spoiled work due to poor lighting; Save half the current; Save eye strain; Save Lamp Breakage.

Increase output by having a good light directly on the work; on the thread you are cutting; in the hole you are boring; right at the spot you are working. Instantly adjustable; stays where it is put.

We will send one of these lamps to any plant or factory on approval.

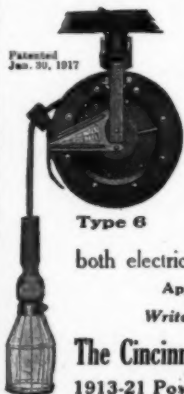
Send for our literature on machine shop specialties.

We make Money Savers.

The Will-Burt Company

Orrville, Ohio

Patented
Jan. 30, 1917



Type 6

"Autex" Extension Reel

Rapidly finding a place in the largest industrial plants, machine shops, service stations, etc., in the U. S. Used for both electric lamp and power extensions.

Approved by Underwriters

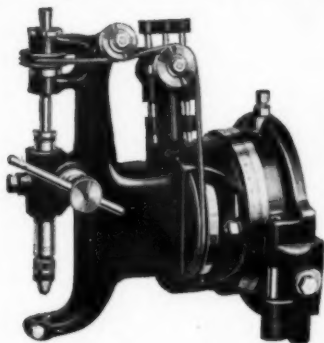
Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.

1913-21 Powers St.,

Cincinnati, Ohio

USE the K-N Attachment



and lay out and drill holes, *absolutely accurate*, 10 to 50 times as fast as it can be done without this Attachment

The reasons why this can be done are:

- 1st, A locked milling machine knee while drilling is being done;
- 2nd, Drill support immediately above the work;
- 3rd, High speed—seven times milling machine speed,—and,
- 4th, Sensitive feed of drill.

These four factors are essential for perfect drilling in the shortest time. The K-N Attachment gives you *all* of them; *no other machine does.*

Made for all standard milling machines. Price, \$250.

Order from your Dealer or from—

E. L. Krag & Company

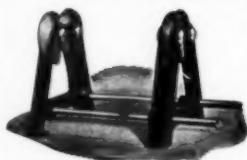
SOLE DISTRIBUTORS

Caulkins Standard Automatic Drilling Jigs
Caulkins Special Automatic and Semi-Automatic Drilling Jigs
Caulkins Automatic Pump for Drilling Machines
Keystone Safety Guard for Punch Presses No. 0 to No. 2½
"Little Bob" Universal Angle Fixture, for use with Milling,
Grinding or Drilling Machines.

542 W. Jackson Blvd.,

CHICAGO, ILL.

For Balancing most anything that revolves, to 10,000 lbs.



Anderson Improved Balancing Ways

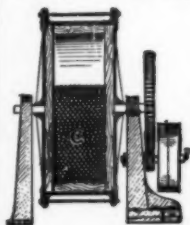
Quickly determine balance of a piece, also test straightness of shafts, crank shafts, etc. No centers or leveling required.

"Swing"	20"	40"	60"	72"	96"
Greatest distance between standards.....	20"	30"	30"	66"	88"
Capacity in lbs.	1000	2000	2000	5000	10000
Approx. shipping weight	45	90	150	350	650
Code	Bend	Bid	Bis	Bib	Ben

Any of above can be furnished with longer shafts

Anderson Bros. Mfg. Co.
1915 Kishwaukee St., Rockford, Ill.

Save—Save—Save 75% and Up of Buffing Costs



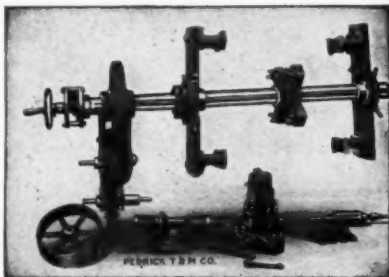
The Abbott Burnishing Barrel

burnishes by the wholesale at a saving of 75 to 99 per cent over buffing one piece at a time. The quality of the work is superior, without bending, breaking or marring anything. "The Abbott Process" is scientifically developed to the point of perfect burnishing service.

*Write for copyrighted Booklet and send samples for burnishing
All sizes of burnishing balls and soap chips for prompt delivery*

The Abbott Ball Company
Elmwood District, Hartford, Conn.

Pedrick Portable Tools



Portable Cylinder Boring Bars

For re boring in position locomotive cylinders and piston valves, cylinders of stationary engines, steam hammers, air compressors, and a wide range of other work. Often it finishes a job before it could be gotten into the shop, saving time, expense and costly delays. Its saving on work that is difficult to move is out of all proportion to its moderate cost.

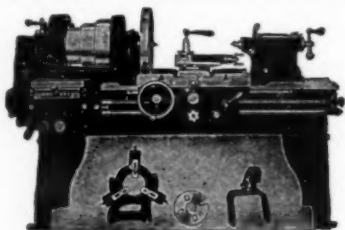
As for durability, we doubt if you can wear out a Pedrick built bar. Many machines we made 25 years ago are still in use.

We also build Floor Type Boring Machines, Crank Pin Turning Machines, Pipe Benders, Portable Milling Machines, etc.

Write for copy of new catalog

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.



The 18" Heavy Duty MUELLER Engine Lathe is a marvel for rigidity, ease of control, and durability. It is the kind of Lathe you need in your shop to meet present day competition.

Let us tell you all about it

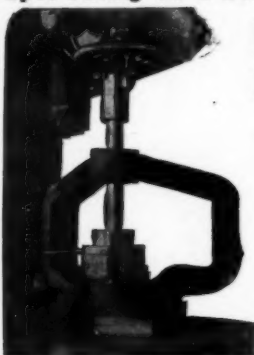
The Mueller Machine Tool Company

Radial Drills and Lathes

ESTABLISHED 1902

CINCINNATI, O.

Spot-Facing on a Drill Press with the

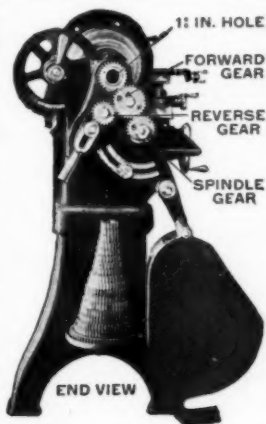


Mummert-Dixon Facing Head

It permits drilling a hole and facing a boss or spot without changing setting of the work, making easy an ordinarily difficult task.

Mummert-Dixon Facing Heads also operate on Lathes, Milling Machines, Boring Machines - a n y tool that has a spindle or will drive a bar, saving time and money in numberless operations. Write for complete illustrated folder.

MUMMERT-DIXON CO., Hanover, Pa.



Barnes 18inch Lathe

Bronze Boxes

Steel Racks

**Hole in Spindle
1 5/8" Diameter**

**For Garage, Repair Shop and
Manufacturing Purpose**

**6 ft. Bed \$600.00
8 ft. Bed \$625.00
10 ft. Bed \$650.00**

Lathes of 9 to 18 inch Swing

Made By

**W. F. and John Barnes Co.
123 Ruby St., Rockford, Ill.**

Extract Oil

FROM YOUR CHIPS, SHAVINGS AND WASTE



No. 400—Capacity: 2 Bushels

The Curtis Ball Bearing Oil Extractor is built to make money by saving oil that otherwise would be wasted. In a few months' time the cost price is returned and then the saving is practically net profit.

It's a method of modern economy that should be in operation in your shop. Made in three sizes.

*Buy a Curtis now and you'll buy less oil for many years thereafter.
Don't delay your investigation.*

Albert B. Curtis Estate

Box 44

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Worcester, Mass.

RED-E Lathe Centers, with High Speed Steel Points Increase Lathe Output



They last 10 to 20 times longer between grindings than do the regular carbon centers.

They increase output by saving the workmen's time, by keeping the machines busy, and by enabling operators to run machines at the highest speeds.

Accurately made and points ground true. Positively will not burn or freeze to work. B. & S., Morse and Jarno tapers.

Send for complete catalog of RED-E Tools

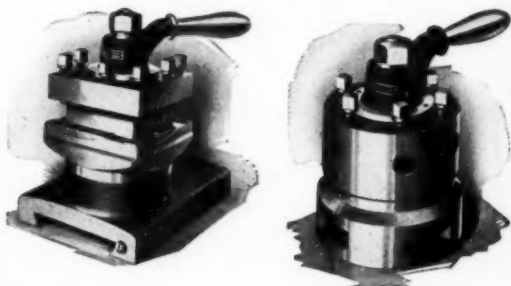
Mayhew Steel Products, Inc.

Ready Tool Co. Division

291 Broadway

New York, N. Y.

Cut Down Cost Cut Out Waste



McCROSKY TURRETS

Have been made standard engine lathe equipment in hundreds of plants and shops because they can secure turret lathe production for a nominal investment. There is a cost-cutting McCrosky Turret for your job. McCrosky Catalogue will show you.

Send for a copy today

McCrosky Tool Corporation
Meadville, Pa., U. S. A.

Branches and Agencies in all principal cities

Export Agents: Benjamin Whittaker Inc., 21 State St., New York



Do you build machines requiring
**Hollow Bored Forgings
Or Steel Shafts?**



Send us blue prints, and let us submit close prices on
Lathe Spindles, Piston Rods, Rams, Clutch Shafts,
etc. You will be pleased with price, quality and
delivery. You may find this a good time to inves-
tigate a reliable source of supply.

Let us hear from you

American Hollow Boring Co.
Erie, Penna.

Planer Centers



These index centers fit any make or size of
planer, and can be attached almost instantly.

Made in three sizes — 13", 20" and 36"

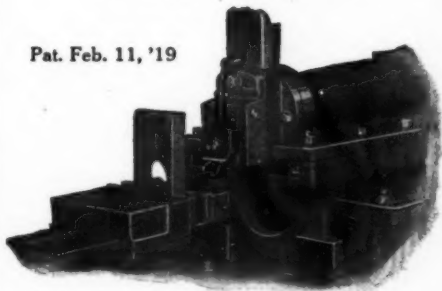
FAY & SCOTT
DEXTER . . . MAINE

BRUNO

Slotting Attachment

for Shaper and Planer

Pat. Feb. 11, '19



A cutting tool holder which converts your shaper into a Horizontal Slotter and makes possible the most intricate shaping such as is required for dies, jigs, gauges, keyways, slotting, etc.

Write for circular. Dept. H.

H. A. MOORE CO.
ROCHESTER, N. Y., U. S. A.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Gear-
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Single Pul-
ley Drive.



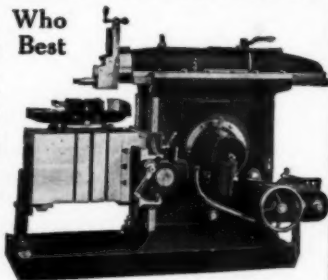
The Smith & Mills Co. Station B.,
Cincinnati, O., U.S.A.

COLUMBIA SHAPERS

**For Those Who
Want The Best**

Heavy duty machines of strictly high class design and construction. Their exceptional accuracy, convenience and durability make them a valuable addition to any machine shop.

*Full details upon
application.*

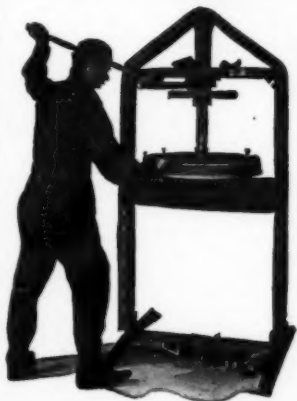


16", 20", 24", 28", 32"
Cone, Single Pulley or Motor Drive

The Columbia Machine Tool Company
Hamilton, Ohio

WEAVER

Forcing Presses



are saving time
and money and
improving the
quality of work
in thousands of

Garages
Electric
Shops
Machine
Shops
and
Factories

because of their wide range of application to both
bulky and small work, due to their

Great Depth Adjustment
Quick Release Feature
and Enormous Leverage

enabling the operator to exert a pressure of 28 tons
without assistance. For complete description and
prices, write for catalogue.

WEAVER MFG. CO.

HARVARD PARK,

SPRINGFIELD, ILLINOIS

ARMSTRONG

GANG PLANER TOOL



Designed primarily to increase production and effect a saving of time on large surface planing jobs, this gang tool is surpassing all expectations in the amount of metal it removes. It pays for itself in a few hours' work.

Our complete catalogue on Tool Holders, Ratchet Drills, Wrenches, Dogs and Clamps, will be sent free.

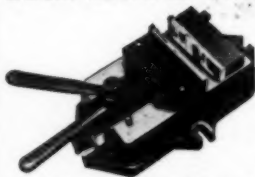
Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave.,

Chicago, U. S. A.

Quick Acting, Powerful Gripping Hartford Milling Vise



Jaw width.....	5 in.
Jaw depth.....	1 1/4 in.
Maximum opening	
of jaw.....	3 1/4 in.
Weight.....	40 lbs.

Also made with swivel jaw, having 1 15/16 in. opening with hard jaw or 2 3/16 in. with soft jaw.

The quick acting, powerful gripping Hartford Milling Vise is designed for the very hardest accurate service. The steel parts are made from drop forgings, hardened and ground on all fitting surfaces. The base is made of special iron.

Worth more than it costs; write for complete data

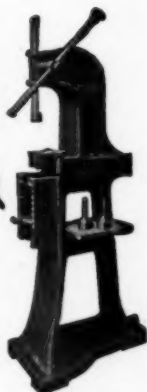
The Hartford Special Machinery Co.

285 Homestead Ave.,

Hartford, Conn.

*This shelf can
be adjusted for any
length arbor*

Stands for *Nicholson Arbor Presses* are equipped with adjustable shelves to accommodate any length of arbor or shaft. Or the shelf can be taken out entirely, without danger of misplacing it, for it is chained to the frame. Just one of the exclusive features that make the *Nicholson Arbor Press* an unusually efficient time and labor saver.



Nicholson Expanding Mandrels

SAVE SPACE—A set of nine does the work of several hundred solid mandrels.

SAVE TIME—Instantly fit any hole, round or square, from $\frac{1}{2}$ " to 7".

SAVE LABOR—No need to caliper or turn down a dozen or so of solid mandrels to get one that fits.

*Write for details of 30-day trial offer.
No obligation, of course.*

W. H. Nicholson & Co.
117 Oregon St., Wilkes-Barre, Pa.

Agencies:

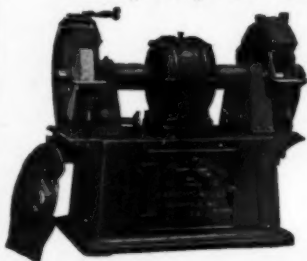
BURTON, GRIFFITH & CO., Ltd.
Ludgate Square, London, E. C.

BURTON FILS
68 Rue des Marais,
Paris, France

MONTI & OSCURO
Milano, Italy

ANDREWS-GEORGE CO.
16 Takegawa-Cho, Kiobashi-Ku
Tokyo, Japan

Marschke Motor Driven 18" Grinder **Heavy Duty—Self-Contained**



A four bearing ball bearing machine, with the rugged build to practically eliminate vibration under heavy service.

Enclosed motor construction, a. c. or d. c.; patented hood for greater safety; complete exhaust system.

Emery wheel 18x3". Also made for 20x3" wheel.

An improved grinder for better results; may we describe and quote?

Marschke Mfg. Co., Inc., Indianapolis, Indiana

Ott Grinders

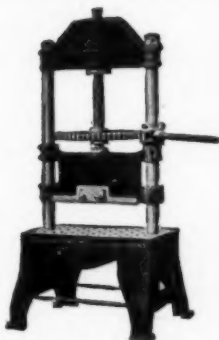
Combine the essentials of
ACCURACY and **RIGIDITY**
with **SIMPLICITY** of design

Simplicity accounts for their price, and for
their popularity among good operators.

5"x18" Plain—10"x32" Universal—6"x6" Internal

Ott Grinder Company
200 West Tenth St., Indianapolis, Ind.

Two Great Money Savers



**Manhattan Type B Screw Press
For Die Makers**

A new strictly one-man machine, *guaranteed up to 80,000 lbs. pressure.* Gives perfect alignment to punch and die. Its large, accurate bed has fifty-two $\frac{1}{8}$ " tapped holes. Better and easier to handle than a punch press that is ten times its price. Avoids holding up punch presses for die-making and cuts out the extra labor costs required to operate them.



Manhattan Surface Grinder

Such is the unusual quality of its mechanism that it operates **NOISELESSLY**. It is compact, yet so massive and rigid with over-size phosphor bronze bearings, that there is no vibration under the heaviest work. Dials on both feeds graduated in thousandths. Ample attachments and adjustments. It has many detailed improvements and special features of its own.

"A Revelation in Quiet Efficiency"

*They'll save you time, labor and money
Complete description of one or both mailed on request*

Manhattan Machine & Tool Works
Dept. A, Grand Rapids, Mich.

AUTO REPAIR SHOPS

The Whitney Cylinder Grinder Will Make Money
For You Regrinding Automobile Cylinders

The grinding wheel travels in a true circle and grinds off only enough to make a hole that is round and straight. This machine does the work right and does it quick. That's why you can do a profitable business with a Whitney.



Write for new catalog

BAXTER D. WHITNEY & SON

Incorporated

WINCHENDON, MASS., U. S. A.

— BLOUNT —

Ball Bearing



Motor Grinders

Ask your dealer for prices

J. G. BLOUNT CO., Everett, Mass.

It's Good Economy—Now



The Canton Crane, Hoist and Truck

In lifting pieces up to 6,000 lbs., or in carrying them to any part of the shop, it easily replaces 6 to 10 men.

It affords good economy now, when economy should be the watchword, because it expedites work and saves so much labor.

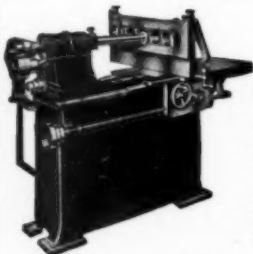
It has been rightly named "the handiest tool in the shop." It is also one of the "savingest".

*Many sizes. Write
for Booklet E-8*

Canton Foundry and Machine Co.
Canton, Ohio

New York Office: 45 West 18th Street, Second Floor

Has no equal for regrinding —tractor, truck and auto engine cylinders



The "SCHMIDT" Internal Grinder

is one of the very best money makers an auto repair shop can install. Regrinds six Ford blocks in a day—larger cylinders in proportion. Takes care of all makes and sizes. Built for strenuous service. Floor space, only 3'x5'.

A dandy money maker at a close price—write

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.

Perpetually Sharp Tools

Most Nearly Realized With the Improved
Thompson Universal Grinder



AND IT'S BECAUSE the Thompson grinds so exceptionally easily and accurately. It will do your plain grinding for straight or taper work between centers, and also surface, edge, die, cutter or internal grinding. The grinding wheel is in a fixed position—an exclusive feature—while the table is adjustable to any position relative to the wheel. Its unmatched efficiency is sure to reduce shop costs and augment the daily output. Complete data obtainable from us or

OUR SELLING REPRESENTATIVES:—

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Wayne Mch. Co.,
Ft. Wayne, Ind.
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Minneapolis, Minn.
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Los Angeles, Calif.

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Selson Engineering Co., London, Belgium,
France, Italy

THE THOMPSON GRINDER CO., Springfield, Ohio

Tri. B. Brand Pack Carbonizer

The BEST for Pack Case-Hardening

Here's a light, fast, long-lived carbonizing agent. It is widely used by the machine tool trade and in many lines of steel fabrication for deep hardening, in boxes in muffle furnaces.

This ideal product is made entirely of hard carbons—there is not an ounce of any volatile matter in its composition—and consequently there's no internal combustion as is the case with raw bone. Nor is it as costly as the so-called "patented compounds."

And then there's Ferro Case—

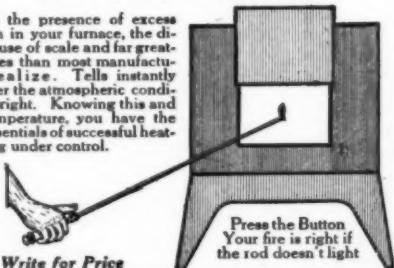
for case-hardening—scientifically prepared—that has cyanide completely "backed off the boards" as to efficiency, economy and safety. Made in two grades. A trial order will prove its great economy.

C. G. BUCHANAN CHEMICAL CO., Cincinnati, Ohio—Sta. 11.

Something New — And Good

The Bennett Detectorod

Shows the presence of excess oxygen in your furnace, the direct cause of scale and far greater losses than most manufacturers realize. Tells instantly whether the atmospheric condition is right. Knowing this and the temperature, you have the two essentials of successful heat-treating under control.



Write for Price

Bennett Metal Treating Co.

Elmwood, Conn., U. S. A.

Also ask us about the Bennett Furnace



DUMORE No. 1 GRINDER

Shows Its Real Merit

For grinding the heads of wood turret lathes, finishing spindle ends and for other operations requiring very high speeds—the DUMORE gives a result much superior to slow speed grinders.

Here is a tool in which perfect running balance is combined with correct cutting speed. With a DUMORE in the shop there is no costly tearing down of jobs—no wasteful delay. It is set up easily and quickly wherever it is needed.

The DUMORE can solve your grinding problems. It is a tool on which you may rely for speed and accuracy.

Ask your dealer for a demonstration and write for our booklet showing DUMORE High Speed Grinders.

WISCONSIN ELECTRIC COMPANY
4343 Sixteenth Street, RACINE, WISCONSIN

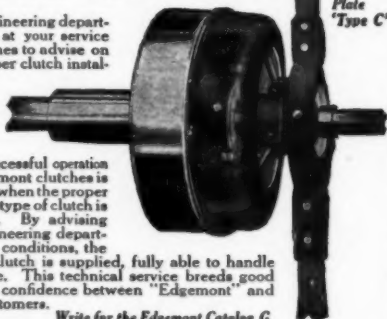
DUMORE HIGH SPEED GRINDERS

Edgemont Friction Clutch

Our engineering department is at your service at all times to advise on the proper clutch installation.

The successful operation of Edgemont clutches is assured when the proper size and type of clutch is selected. By advising our engineering department of conditions, the proper clutch is supplied, fully able to handle the drive. This technical service breeds good will and confidence between "Edgemont" and their customers.

Write for the Edgemont Catalog G



Edgemont Machine Co., Inc., DAYTON, OHIO

COOPER UNIVERSAL JOINTS FLEXIBLE COUPLINGS

"YOU CAN'T BREAK THEM OR WEAR THEM OUT"

Smooth; neat; only 5 simple parts; large oil space; working surfaces case-hardened; no limit to size; guaranteed stronger than shaft at any angle.

6 PATENTS



Three hundred years ago Hooke invented the Universal Joint with fixed centers. Three hundred years have elapsed and still the Hooke type of universal joints are burning up power and breaking in operation.

The Cooper Patented Universal Joint with no fixed centers is just as frictionless as the crosshead of an engine at any angle. **"You can't break them or wear them out"** with shafts joints are bored for. Perfect lubrication at any speed.

Sizes $\frac{1}{4}$ " to 2" in stock bored to fit YOUR shafts.

Send for one and try it out

Cooper Flexible Transmission Co., Inc.
1723 8th Ave., Brooklyn, N. Y.



Reasons why "Rarefieds" are superior dust collectors

Greater Efficiency—After thoro investigation and trial, a number of the largest plants in the country installed from 5 to 20 "Rarefieds"—one is using 26 at present. A list of these users will be sent you on request.

Save Power—They never fail to save power. One firm is now doing with 25 electric h. p. what formerly took 45 h. p.—a net saving in this instance of 20 h. p.

Reduce Repairs—Abrasion of fan parts is prevented because the "Rarefied" collects and automatically discharges the dust before the air reaches the fan. Saves labor costs because there's no cleaning out by hand.

Our interesting Booklet gives full details as to "how" and "why." Write for a copy

The Knickerbocker Company
Jackson, Michigan



CULLMAN SPROCKETS

STOCK AND TO ORDER



Diamond, Whitney, Baldwin, Duckworth and
Coventry Chains, Block, Roller and
High Speed Silent types on hand



CATALOG

CULLMAN WHEEL CO.,
1359 ALTGELD STREET

CHICAGO

Investigate LATEST
"WHITNEY"
HIGH EFFICIENCY
Roller and Silent Type
CHAINS

also *Low Cost per Thousand Miles of Service*



Latest Roller Chains Have Special Quality
Solid Rolls and Other Important Improvements

Front End Motor Chain Drives



Exceptional
Mileage
and
Never Known
to Skip the
Sprocket Teeth



The Whitney Mfg. Co.
Hartford, Connecticut, U. S. A.

Time Saver for Milling Internal Keyseats

Let us tell you what this
tool will do for you.

Get Catalog O

National Machine Tool Co.

2268 Spring Grove Ave.,

Cincinnati, O.



A Strong Portable Key-Way Cutter

This handy little tool is easily taken right to the job where it cuts key-ways of just exactly the right dimensions. It does the work quickly, accurately and at minimum cost, saving labor and money. Just clamp the tool to the shaft and turn the crank.



New Style "B"

Style "B" has six milling cutters and cuts keyways from $\frac{1}{4}$ " to 2" wide, in shafting 2" to 8" in diam. and 12" long without resetting.

THE BUCHER-SMITH CO.
East Liverpool, Ohio

"—it surely leads the World"

**That's the verdict of those who
use the Catlin Keyseater**

NO, YOU CAN'T BEAT IT for quick, accurate keyseating at rock-bottom cost. Besides, it is very simple to operate and stands up to the most strenuous demands. It has less than half the parts of other keyseaters.

In ordinary shop practice, without any attempt to establish records, the "Catlin" cut in 20 minutes keyseats $2\frac{1}{2}$ " long, $\frac{1}{2}$ " wide and $\frac{1}{4}$ " deep in 20 mitre gears of 8" diam.; in 3 minutes, a keyseat 6" long, 1" wide and $7/16$ " deep in a cast steel hub. These are merely examples of its productiveness under ordinary shop conditions.

The picture shows the No. 1 Catlin, belt driven, with three-step cone pulley. Our other sizes, for belt or motor drive, cover practically all keyseating requirements.

Always glad to answer questions. Let us mail you the descriptive folder



Chattanooga Machinery Company
Chattanooga, Tenn.



"Wear-Ever" Woodruff Chuck And Keyway Cutter

The "Wear-Ever" Woodruff Keyway Chuck insures a positive drive and true-running cutter. Eliminates making collet chucks. Fits all standard makes of milling machines, and is made in all tapers, such as Brown & Sharpe and Jarno tapers.

Let us supply you with cutters
No extra charge for the square



Centers by the shank

Drives by the square

**SCULLY-JONES & COMPANY, 555 Railway Exchange Bldg.,
CHICAGO, ILL.**

Grant Rotary Rivet Spinner



**Highest Speed
Perfect Finish
Absolutely Uniformity
And it's Noiseless**

Nowhere else can you find such a wonderful combination of all the good qualities in any one riveting machine. To prove up, send us samples of your work, so we can show you what the "Grant" will do and at the same time give you close estimate of production with low-priced labor. Also Catalog, if you wish, showing the several styles.

Let us hear from you

**The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.**

Terrell's Steel Lockers

Offer Many Practical Advantages



1. Permanent Construction

They last a life-time, without renewals or repairs.

2. Movable Units

Built in movable units, they can be rearranged or moved from one shop to another, and new units added as required. You don't have to wait until you put up that new building.

3. Better Service

They give better service in their greater cleanliness, privacy and convenience; in the feeling of satisfaction of yourselves and your workmen; in the reduction of fire hazard, etc., etc.

Terrell's Steel Lockers are made in a variety of sizes and styles, single or double tier, and adapt themselves to available spaces and meet special conditions at moderate cost. Built of permanent steel, they show the same economy as permanent buildings and good tools—they give better satisfaction and service in every way. They are steel assets, not wooden liabilities.

*Put your needs up to us, without obligation
Your purchase will be only at your pleasure*

Terrell's Equipment Company

Hall & Division Sts., Grand Rapids, Mich.

A Superior Power Press —the Willard



It features many up-to-date practical improvements, and all parts are interchangeable. The advantage it offers in being able to incline it for operating dies gives it a clear superiority over other types. Adapted for all kinds of blank cutting, punching, perforating, forming and bending.

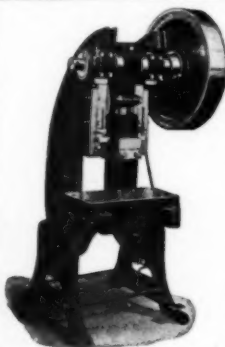
Safety lock enables operator to lock clutch bolt securely in collar so dies may be perfectly secured. Positive safety stop of latch prevents press from "repeating."

Write for specifications

The Willard-Middletown Machine Co.

Cincinnati, Ohio

Successors to The Willard Press & Tool Co.



L-J Inclinable Fly Wheel Press

This No. 4 Press has a capacity of 34 tons. It is accurate and rapid. Other sizes; also built in geared head and combination types.

Our Dealers

Herberts Machinery & Supply Co.,
San Francisco and Los Angeles, Cal.
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City, Mo.
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Dale Machinery Co., Inc., New York
J. L. Lyons & Son Inc., Bridgeport, Conn.
G. T. Reynolds & Son, Providence, R.I.

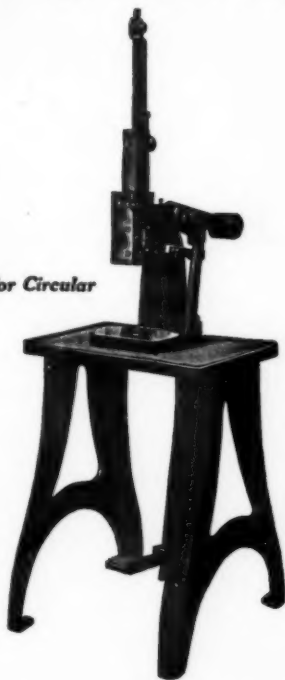
Write to the nearest, or

Loshbough-Jordan Tool & Mche. Co.

Elkhart, Indiana

Spring Foot Press

Write For Circular



The Taylor & Fenn Company
Hartford, Conn., U. S. A.

T. H. L. Front Lever Bench Punch

Weight, 70 lbs. Stands up under longest, toughest wear and tear. Punch cannot lose alignment with die. Adjustable gauge. All parts interchangeable.

Price \$50

Extra Punches, 23 cents each; extra dies, 30 cents.

Capacity 13/32" thru 1/4" steel, 11/32" thru 5/16", and up to 1/2" thru thinner metal.

A good buy; can ship promptly

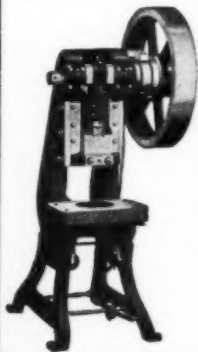
**T. H. LEWTHWAITE
MACHINE CO.**

(Est. 1890)

417 E. 31st St., NEW YORK



Here Is A Press



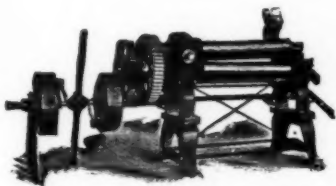
**With Plenty of Steam
Back of THE PUNCH**

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

**Rockford Iron Works
Rockford, Ill.**



BELOIT

INITIAL TYPE

Sheet & Plate Bending Rolls

The Beloit Initial, or side bending, type roll has been designed to meet the demand for a strong, efficient, quick acting roll for use where the heavier Pyramid Type is not required. It is especially adaptable for use in shops handling sheet metal and for the lighter class of work in Boiler Shops, such as stacks, breeching small tanks, and the like.

The upper roll is geared to the adjustable lower roll thus pinching the plate, while the idle roll, which is also adjustable, does the bending. The outer housing is hinged and the upper roll is raised by throwing a cam lever, thus permitting the removal of sheets bent to a full circle. All styles of these rolls are double back geared and require a minimum amount of power.

Built in twenty-six sizes with capacities up to 5/16" and from 14" to 98" between housings.

HENDLEY & WHITTEMORE CO.
100 S. State St., **BELOIT, WIS.**

ATLAS

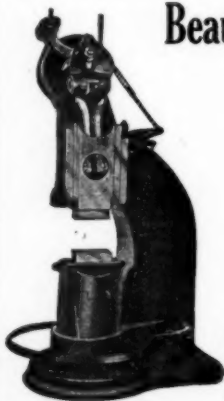
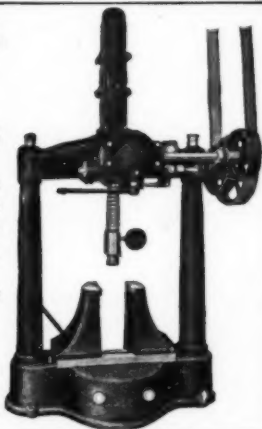
30 Ton

Power Press

will give you
greatest possible
efficiency on your
production work.

*ATLAS Presses are built
in all sizes and types.*

Atlas Press Co.
Kalamazoo, Mich., U.S.A.



Beaudry Hammers

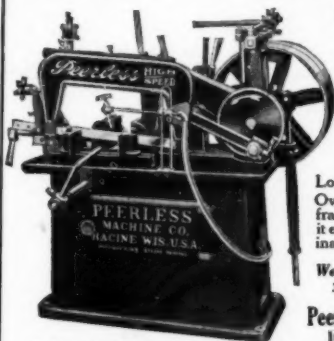
For General Forging
Belt or Motor Driven
50 to 500 lb. Rams

Simple,
Powerful,
Durable

Catalogue on request

BEAUDRY & CO., Inc.
45 Bromfield St.,
BOSTON, MASS.

Peerless HIGH SPEED Hack Saw Machines



Right Hand View 6"x6" Belt Drive

6x6", 9x9" and
13x16"

Best in the world
for production or
maintenance.

Fast cutting and
accurate.

More cuts—with
less blades.

Long life—few repairs.

Over-balanced saw
frame and guide make
it easy to handle—elim-
inates accidents.

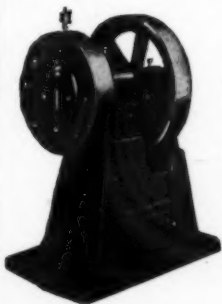
*We will tell you more if
you will write to*

Peerless Mche. Co.

1609 Racine Street

RACINE, WISCONSIN

Quickly Reduces Round Stock



With Maximum Economy

THE "ETNA" ROTARY SWAGER does better and quicker swaging than is possible with either hand or power hammer forging, and with bed-rock economy.

Made in several sizes to swage from $\frac{1}{4}$ to $4\frac{1}{2}$ " diameter. Delivers 3000 blows per minute as compared with 400 by the power hammer. Outlasts any other swager built.


Cuts swaging costs 80 per cent. Tell us your stock reduction requirements and without obligation to you we'll figure how best it can be done.

The Etna Manufacturing Co., TOLEDO, OHIO

"QUICKWORK"

Registered in U.S.A. and Foreign Countries

Rotary Shears

 Prices Reduced Sept. 1, 1921

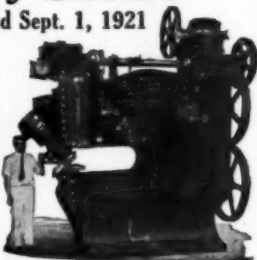
Made in 7 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

Save 50 to 90%

Eliminates Oxyacetylene cutting and plate planing

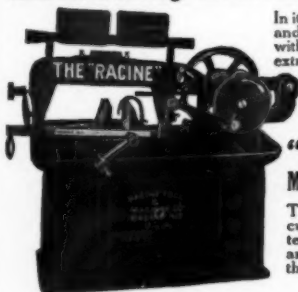
Write for catalogue No. 60



Patented June 3, 1913; Aug. 26, 1921.

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.
Cable Address "Quickwork," "W. U." and "General" Codes

Saves Blades—Saves Time—Saves Material
And these Savings are not Little Ones, either



In its saving of time, blades and material, combined with great accuracy and extreme simplicity, there is no other cutting-off machine made which compares with

"RACINE" High Speed Metal Cutting Machines

The only positive draw-cut machines. Guaranteed to cut faster, truer and more economically than any others.

"Standard the World Over"

Write for Catalog H

Racine Tool & Machine Co., Racine, Wis.

Every Shop Needs A Hack Saw



Marvel Draw-Cut Hack Saw No. 2

With Swivel Vise that Swivels Both Ways

The No. 2 is a general work saw in use all over this and foreign countries. **THE PRICE IS LOW.** We make a smaller size still lower in price. And we make high speed saws, metal band saws, punches, shears, drill press vises.

***INVESTIGATE THEM NOW
by sending for our catalogue
that gives all the details***

Armstrong-Blum Mfg. Co.
341 N. Francisco Ave., CHICAGO, ILL.

New 4,000 Lb. Shop Cranes



Especially desirable tool for Machine Shops and Automobile Garages. Always on the job. Stand for efficiency, convenience, economy, service.

\$65. Cash

with order, f. o. b. cars
Fredericktown, Ohio.

Don't pass this opportunity by

Act NOW!

RUSSELL MACHINE COMPANY, Pittsburgh, Pa.



How Fast

Can you cut Sheets, Bars and Rods in Iron and Mild Steel on a Power Machine? The moving cutting member is limited to allow stock to be pushed to length of stop gauge.

**NOT SO—With
Hand Operated**

**Hercules Shears
and Rod Cutters**

**Four sizes as a Combination
Machine.**

Two sizes as Plain Shears.

**Catalog No. 2 for
your literature**

Nos. 1, 2 and 5 Shears and Rod Cutters

W. C. & F. C. TUCKER, Hartford, Conn., U.S.A.

DO YOU KNOW?—*that* ONE OF THESE



↓ COSTS YOU MORE

THAN ONE
OF THESE

Towsley Trucks, with their own running gear, are far more efficient and economical than elevating trucks for handling material in process of manufacture.

If you are interested and have an open mind regarding the efficiency of your truck equipment, we shall be glad to demonstrate *to your entire satisfaction* that the above is true; also that **Towsley Trucks** will pay for themselves in two or three months by their big saving in labor.

If you have never considered your Truck equipment from the standpoint of increasing your earnings to the extent of possibly 500 per cent a year on your investment in Trucks, you will be surprised to learn how much money you have been losing and how much we can save you.

*The data is
yours for
the asking,
wholly
without
obligation.*



JOHN T. TOWSLEY MFG. CO.
1036 Woodrow St., CINCINNATI, OHIO

Weigel Double-Wheel "Trukaster"

Has heavy plates and axles. Easiest running, strongest and most durable double-wheel caster made. Lasts three times as long as others.

"Kwality Kaster"

(See Illustration)

The strongest and most durable single caster. Won't crush or break. Swivels on steel machined rollers.

Write for Price List

**THE HAMILTON
CASTER & MFG. CO.
HAMILTON, OHIO**



HITCHCOCK'S

Hitchcock's List

**Goes to the Heart of 96% of
the Best Plants in the Country**

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

Peter's Abrasive Metal Saw

**Saves Time and Material
In Your Tool Room and Shop**

Cuts quickly and accurately, square or otherwise, at option of operator. Eliminates nicking and breaking, prevents waste of stock. Equally good with high speed steel, angles, channels, tees, brass or iron. Doesn't draw temper.

8" Size \$22.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to 1" square.

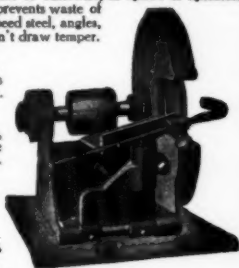
12" Size \$60, with C. S.

Cuts up to 2 1/2" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



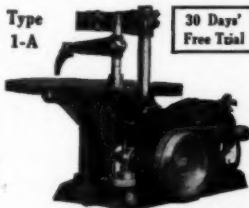
Saves 60% In Cost Of Filing

**Uses up broken saw blades and saws
30% faster than other sawing machines**

But don't take our word for it. Send for one of our **Filing and Sawing Machines** on 30 days' trial, and return at our expense if not the time saver we claim.

Uses standard files from 3" needle to 12" flat or bastard, also any hack saw blade or even broken blades. Adjustable up and down to utilize entire file. Does not require skilled help.

**Type
1-A**

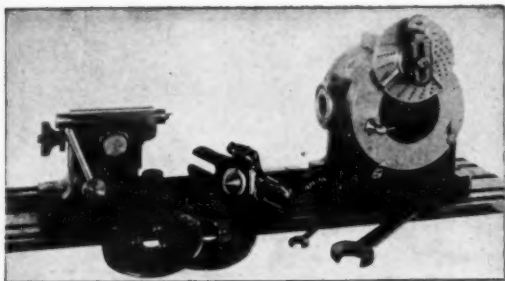


**30 Days'
Free Trial**

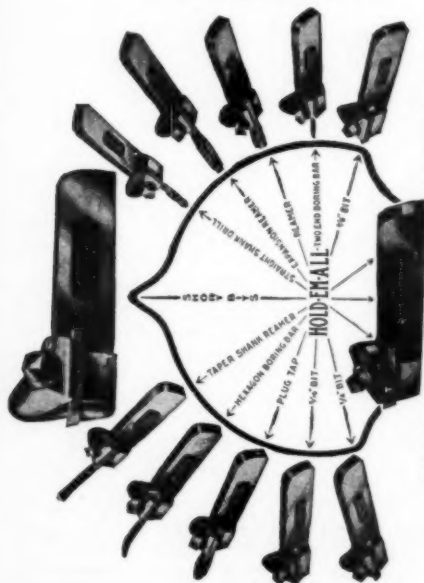
Don't forget our trial offer. How about today?

Johnson & Biddle Tool Co.,

**Elkhart,
Indiana**



Plain Index Centers Swing 10" Diam.
For any Plain Milling Machine



"HOLD-EM-ALL" TOOL HOLDERS

Holds any shape stock. Holds short bits. Combines many in one. Made R and L hand, Off-set and S shanks, and conform to all types of other makes. Write for catalog.

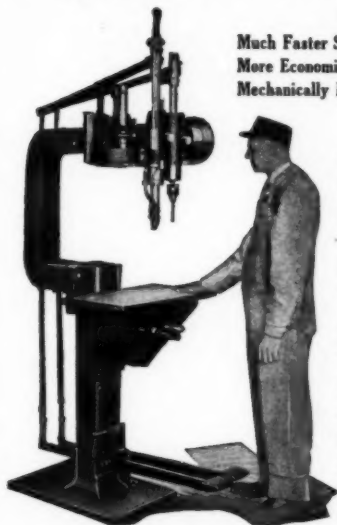
SIMMONS ECONOMY TOOL CORP.,

ALBANY, N. Y.

Magazine-Fed Screw Driving

Means

Much Faster Screw Driving
More Economical Screw Driving
Mechanically Perfect Screw Driving



Your competitors are using magazine-fed screw driving machines.

Don't lag behind the procession.

Just investigate—that's all.

You'll be surprised and pleased at the economies in store for you.

Reynolds Automatic Magazine-Fed Screw Driving Machines are made in several types and sizes, to save two-thirds and upwards of the cost of driving all kinds of screws in all kinds of work.

Send us dimensions over all of your work, and gauge and length of screws used, and let us demonstrate what we can save you without obligating you in any way.

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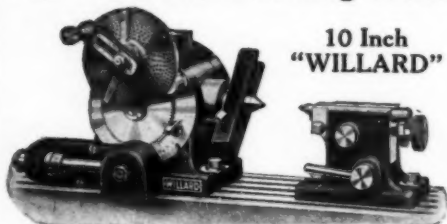
You start the ball rolling, and we'll gladly do the rest

The Reynolds Machine Company

Dept. H. H.,

Massillon, Ohio

Full Universal Dividing Head



10 Inch
"WILLARD"

Right or left hand. Takes care of heaviest cuts on any miller. All parts interchangeable. Swivel head rotates from 10 degrees below horizontal to 10 degrees beyond vertical. Tailstock center clamps securely at any angle. Locking device relieves worm wheel and index pin of cutting strain. Wear between worm and wheel is taken up without disturbing their axial position. Driving mechanism for spiral cutting can be applied. One large index plate takes place of the usual three, giving greater accuracy and more divisions.

THE WILLARD-MIDDLETOWN MACHINE CO., Cincinnati, O.
Successors to The Willard Press & Tool Co.

This Hand Feed Miller \$155.

**Save Power—Save Room
Save Money**

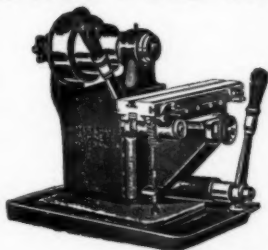
That is what you do when you install Burke Milling Machines, as they take less power, need less factory space, and on account of the convenience in operation your small milling operations can be done much more rapidly than on a larger, heavier type machine.



Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
297 East 16th St., Conneaut, Ohio

Just The Machine



for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

THE CARTER & HAKES MACHINE CO., West Winsted, Conn., U. S. A.

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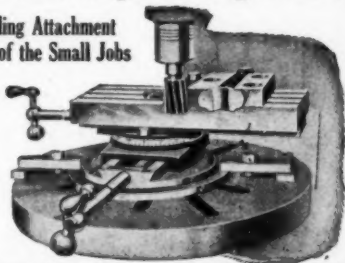
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Relieves and Replaces Big Millers

**Davis Milling Attachment
Does 90% of the Small Jobs**

**Converts
any Drill
Press from
14 to 42-in.
swing in
2 Minutes**



Relieves your large millers, comes in handy spotting castings, milling ends of bosses, etc., and does 90% of the lighter jobs as well as a \$1,000 machine; cuts keyseats perfectly. We also have low factory prices on our cylinder reamer for reboring the Ford car, and on our reliable air compressor. Write for the details.

Hinckley Machine Works, HINCKLEY, ILL.

DO You Use AIR?



**THE POWELL
AIR GUN VALVE**

JUST PRESS
THE BUTTON

BUY
POWELL
AIR GUNS
KEEP
CLEAN

CLEANS
WORK BENCHES
AND
MACHINE TOOLS
MADE IN SIZES
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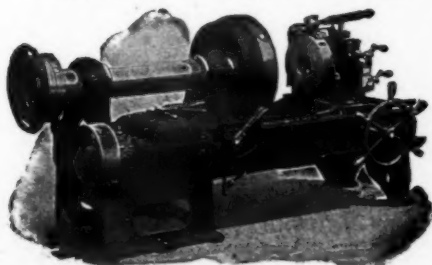
ORDER A SAMPLE
THE W. M. POWELL CO.
1200 DRAPER ST.
CINCINNATI, O.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

Features of Excellence

Keep Shop Costs Down to Bed-Rock



(No. 4 Peerless, Belt Drive. All Gears are Covered.)

THE ECONOMICAL service rendered by B. & K. Pipe Machines is easily understood when you know that—

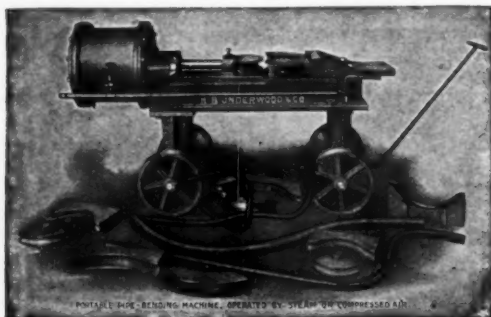
- ¶ They are equipped with a gear box drive for obtaining the right threading speeds.
- ¶ All uncertainty or guess work in selecting the right speed for threading each size of pipe is positively eliminated.
- ¶ Dies can be changed without removing a screw.
- ¶ Die slot can be cleaned without removing the cover.
- ¶ A rotary oil pump supplies oil to dies and cutting-off tool.
- ¶ Pump is gear driven—no belt to soak up oil.
- ¶ All B. & Ks. have the Peerless adjusting mechanism.
- ¶ The larger machines have two gripping chucks.
- ¶ You have 17 styles and sizes to choose from.

It will pay you to send your inquiry to us now

AT EDWARDSVILLE, ILLINOIS

Bignall & Keeler Machine Works

Railway and Repair Shops Use Underwood's Pipe Bender



Bends a 2-inch Pipe in 2 Minutes—Cold

HERE'S a handy and dependable portable pipe bender that bends any size of pipe up to 2-inch cold, without flattening or splitting. The piston is forced back by a spiral spring, so that front head and piston rod require no packing. Dies are easily changed and adjusted. Works on 60 lbs. steam or air pressure.

Our comprehensive line of time and money saving tools includes the following: —

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders; and special machines built to order.

*Your superintendent will find our Catalog interesting
And you will find the use of our tools profitable*

H. B. Underwood Corporation
1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.50** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool List advertisers.

FOR SALE BY

Frank H. Parker Company, First Nat'l Bank Bldg., Chicago, Ill.	
Bending roll, 10', 3" cap.....	\$1500.
Brake, 6' Robinson, 10 gauge..	400.
Drill press, 20" plain.....	70.
Grinder, No. 60 Heald cylinder	1400.
Lathe, 20"x12" p. r., 1 1/2" h. s....	150.
Lathe, 20"x12" c. r., h. s., t. a....	400.
Lathe, 24"x 8" Putnam.....	300.
Lathe, 26"x16" s. s., c. r.....	\$ 200.
Lathe, 42"x18" Niles.....	850.
Lathe, 48"x20", raised to 66"....	1800.
Lathe, 60"x30".....	2200.
Shear, 36" Bliss, 18 ga., power	250.
Shear, 50" square No. 8 gauge	650.
Welder, Federal spot, 15 k. w.	400.

FOR SALE BY

Norton Brothers Machinery Co., - - - Cincinnati, Ohio	
Lathe, 16"x 6" American, quick change.....	\$ 585.
Lathe, 22"x15" Lodge & Davis, taper attachment, cheap.	
Milling machine, No. 3 Cincinnati plain, full automatic, geared feed, cone drive, complete.....	\$ 650.
Radial drills, 4" Cincinnati-Bickford, (2), each.....	1000.
Radial drill, 6" Prentice, old style.....	850.
Shapers, crank, one each 16" Potter & Johnston, Steptoe, Stockbridge and Whip.	

FOR SALE BY

Botwinik Brothers, - - - 21 Sylvan Ave., New Haven, Conn.	
Drills, 4-spdl. No. 3 Garvin gang, with countershafts, like new, each....	\$ 50.
Drill, radial, 2 1/2" Dreses-Mueller plain, good condition.....	275.
Grinders, Hoe No. 2 surface, complete with magnetic chucks, excellent, each.....	275.
Lathe, Hende 12"x5", q.c.g., tie rod type, taper att., etc., like new....	450.
Polishing heads, Diamond No. 1 1/2 bench, complete with pulleys, countershafts, excellent, each.....	15.

FOR SALE BY

Reliance Machinery Sales Company Brighton Road at Pennsylvania Ave., - - - Pittsburgh, Pa.	
Blowers, Nos. 6 & 8 Sturtevant.	
Boring mill, 24" Bullard, r. p.	
Boring mill, 90" Niles, 2 heads.	
Compressor, 6"x6" Hall, belted.	
Compressor, 8"x6" Blaisdell, belted.	
Drills, upright, 10" to 36".	
Exhauster, Niagara 40".	
Lathes, 8" to 48"—real bargains.	
Lathes, Greenlee turret 24"x26".	
Millers, all sizes, plain & universal.	
Pipe machines, 2", 4", 6", 8" & 12".	
Planer, P. & W. 16"x16"x4" crank.	
Shapers, 14", 16", 20", 24" & 32".	
Shear, No. 235A Schatz, hand power.	
Over 200 Machines in stock. What have you for sale?	

SECOND-HAND MACHINERY

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

11"x 4' bench lathe.
16"x 8' quick c. g.
18"x 8' plain c. g.
20"x 8' Lodge & Shipley.
24"x14' Boye & Emmes.

16" Smith & Mills.
20" Steptoe.

24"x24"x 6' new Liberty.
40"x36"x 8' Powell.

Whitney hand miller.
No. 14 Brown & Sharpe plain.
No. 12 Kempsmith plain.
No. 3 Becker plain.

16" Kern, high speed.
24" Foote-Burt.
40" New Haven.

Cold saw, 26".
Engine, Corliss, 12"x30", left hand.
Grinder, 5"x18" plain.
Grinder, 8"x30" plain.
Hammer, 800 lb. steam.
Hammer, 1100 lb. steam.
Hammer, 3400 lb. steam.

LATHES.

26"x10' Bridgeford.
26"x18' Springfield, motor-driven.
28"x16' LeBlond.
36"x16' Fitchburg.
54"x16' Fitchburg.

SHAPERS.

20" Gould & Eberhardt.
24" Gould & Eberhardt.

PLANERS.

42"x42"x12' New Haven.

MILLERS.

No. 4 LeBlond plain heavy duty.
Owen duplex.
No. 2 Garvin universal.
No. 3 Kempsmith universal.

DRILLING MACHINES.

6' arm Prentice radial.
No. 2 Pawling & Harnischfeger drilling and boring machine.

MISCELLANEOUS.

Marking machine, Mathews.
Screw machine, 14" Foster.
Slotter, 6" Sellers.
Slotter, 12" Sellers.
Tapper, No. 2 Garvin.
Turret machine, No. 4 Wood.

FOR SALE BY

The W. M. Pattison Supply Co., - - - Cleveland, Ohio
Main Office, Show Rooms and Warehouse.

Boring mill, No. 1 Cleveland, horizontal, complete.
Drill, sensitive, Sipp, 3-spindle, sliding head.
Drills, sensitive, Leland-Gifford, h. s., b. b., 14" single spindle, (2).
Drill, Hoefer, 26" sliding head, b. g., p. f.
Flat magnetic chucks, several sizes.
Grinding machine, universal, Webster & Perks No. 1, 10"x30".
Grinding machine, universal, Bath No. 1.
Lathe, 14"x 6' Bradford, c. r.
Lathe, 14"x 6' Rockford, d. b. g., quick change gear and c. r.
Lathe, 16"x 8' Hendey, q. c., c. r., taper, pan bed, draw-in attachment, relieving attachment.
Lathe, 16"x 7' Chard, d. b. g., q. c., with c. r. and taper.
Lathe, 16"x 6' LeBlond q. c. g. and c. r.
Lathe, 16"x 8' Flather, q. c. g., d. b. g., with c. r., taper, draw-in attachment and relieving attachment.
Lathe, 18"x 8' Boye & Emmes, d. b. g., 3-step, with c. r.
Lathe, 18"x 8' Bradford, quick change, d. b. g. and c. r.
Miller, universal, No. 1-B Hendey, complete.
Miller, universal, No. 2-B Hendey, complete.
Miller, universal, No. 3-B Hendey, complete.
Miller, plain, No. 3-G. H. Hendey, complete.
Miller, vertical, No. 5-C Becker, complete.
Miller, plain, No. 6 Brown & Sharpe, with pump.
Shaper, 24" Potter & Johnston tool-room, complete.
Turret lathes, universal, No. 2-B Foster (3).
Turret lathes, universal, No. 1-B Foster (2).

This is a partial list. We have a complete assortment on hand.
Write us and state your requirements. Correspondence solicited.

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at our various factories and stores.

LATHES.

14"x 8' Whitcomb, q. c.
17"x 6' & 8' LeBlond, geared head.
20"x10' LeBlond, q. c.
24"x10' Whitcomb, q. c.
26"x10' Pond, 220 volt motor, d. c.
24"x24' Niles, c. r.
28"x12' Pond, c. r.

32"x12' Pond, c. r.
36"x20' Pond, 220 volt, motor, d. c.
42"x20' Niles, triple geared.
46"x30' Niles, triple geared.
54"x28' American, 220 volt motor, d. c.

TURRET LATHES.

No. 6-A P. & J., 220 volt motor, d. c.
1", 2", and 2 1/2" P. & W.
2"x24" W. & S. hollow hex.

2"x24" Jones & Lamson, cone head.
24", 28", & 34" Gisholts.
32" Conradson American.

PLANERS AND SHAPERS.

14" & 20" G. & E. shapers.
20" Stockbridge shaper.
24"x24"x 6' Powell.
24"x24"x 6', 8' and 10' Whitcomb.
26"x26"x 6' Gray.
30"x30"x 6' & 10' Ponds, 2 heads.
30"x30"x12' Pond, reversing motor.
36"x36"x16' Pond, heavy reversing motor.

36"x36"x 8' to 28' belt drives.
42"x42"x14' Bement, 4 heads.
48"x48"x20' Bement, 4 heads.
60"x60"x14', 20' & 24' Niles.
72"x72"x12' Bement, 4 heads.
72"x72"x20' heavy Ridgway, reversing motor.
10'x10'x36' Betts, 4 heads.

MILLERS AND GEAR CUTTERS.

Nos. 1 1/2 and 2 Brown & Sharpe universal, cone type.
No. 2-A Brown & Sharpe universal, all geared.
No. 2-B B. & S. plain, all geared.
Nos. 4 & 5 B. & S. plain, cone type.

No. 5 Brown & Sharpe vertical, cone type.
Nos. 3, 4 & 6 B. & S. gear cutters.
15" Gleason bevel gear generator.
6"x48" & 80" P. & W. old style thread millers, also 132" long.

DRILLING MACHINES.

28", 32" and 40" sliding head drills.
3', 4', 5', 6' plain radials.

4' & 6' universal radials.
12-spindle P. & W. No. 13 multiple.

GRINDERS.

No. 8 Higley saw grinder.
8"x30" Fraser universal.
10"x72" Norton plain.

12"x36" Cincinnati, plain.
12"x40" No. 3 Brown & Sharpe universal.

BORING MACHINES.

2 1/2" Bar 4' W. & S. horizontal.
2 1/2" Bar 5' Binsse horizontal.
2 1/2" Bar 6' & 8' Bement horizontals.
4 1/2" Bar 8' Niles horizontal.
4 1/2" Bar 9 & 10' Bement horizontals.

3" Bar No. 1 Lucas horizontal.
4 1/2", 5" & 6 1/2" Niles floor borers.
42" and 51" Niles vertical mills.
60" Bement vertical mill.
10' Niles, 220 volt motor, d. c.

MISCELLANEOUS.

Air compressors, 215', 525' and 835' capacity.
Blowers, No. 10 Sturtevant; No. 70 Buffalo.
Crane, 3-ton Niles, 14' 2" span, d. c.
Crane, 20-ton 48' span, Sellers, d. c.
Engines, 125, 150 and 200 h. p. Philadelphia Corliss.
Generator set, 100 k. w., d. c., and engine.

Graduating machine, LeBlond.
Hammer, 750 lbs. Sellers.
Hot blast apparatus, 120" fan engine, Sturtevant.
Motors, 5 to 100 h. p., d. c.
Pump, 500 gal., steam drive.
Saw, 8' rounds, Higley.
Screw shaver, No. 2 P. & W.
Separator, oil, No. 1 American.
Slotter, 6" Bement.

SECOND-HAND MACHINERY

FOR SALE BY

Tuber, Velick & Co., Inc., - Lake & Desplaines Sts., Chicago, Ill.
Telephone: Monroe 4199

PUNCH PRESSES.

No. 604 Bliss, (4).
 No. 20 Bliss, (2).
 No. 4 Verdin Kappes.

No. 3 V. & O.
 No. 2 Michigan.
 No. 2 Willard, (2).

MILLING MACHINES.

No. 4 Brown & Sharpe.
 No. 15 Garvin.
 No. 34 Fox, (25).

Bristol, (10).
 Wisconsin, (15).

DRILL PRESSES.

Allen 5-spindle h. s.
 Hoefer 3-spindle.

20" Barnes, (15).
 20" Canedy-Otto, (10).

MISCELLANEOUS.

Grinder, B. & S. universal.
 Hammers, Bradley, (4).
 Lathes, (10).
 Motors, all sizes, (100).
 Paper balers, (100).

Screw machines, (12).
 Shear, 11' power.
 Shear, 60" rotary.
 Trucks, 15 flat, 3 lifting.

Tons of belting, pulleys, shafting and hangers.

FOR SALE BY

The O'Brien Machinery Co.,

113 N. Third St., Philadelphia, Pa.

Bending rolls, 8', 8" and 6" diam.
 Bolt cutter, 4" Acme, single head.
 Bolt cutter, 1" Acme.
 Bolt cutter, 3" Acme, single head.
 Drill, 5" spdl. Baker Bros. hvy. duty.
 Drill, Avey Hi-speed sensitive with motor attached.
 Drill, Allen 5-spindle, high speed.
 Drill, Allen 6-spindle, high speed.
 Drill, 36" Hoefer.
 Drills, Moline heavy duty hog, (2).
 Drill presses, Henry & Wright No. 3, class B, (2).
 Gear cutter, 36" Whiton.
 Grinder, 6" x 32" Norton pl. grinder.
 Grinder, No. 1 Norton universal.
 Grinder, No. 2 Norton universal.
 Grinder, No. 2 Acme universal tool and cutter.
 Grinder, No. 14 Bealy disc, with press.
 Grinder, No. 14 Walker surface with magnetic chuck.
 Grinder, 2 Wilmarth & Morman hand feed surface grinders.
 Hammer, 40 lbs. Williams-White Yeakley, belt drive.
 Hammer, 500 lb. Beaudry.
 Hammer, 650 lbs. Williams-W. Y.
 Hammer, 600 lbs. Bement-Miles, double frame steam.
 Hammer, 1200 lbs. Bement-Miles, double frame steam.
 Lathe, 8" x 108" Fitchburg Lo-Swing.
 Lathe, 16" x 6" Cisco.
 Lathe, 16" x 8" Cincinnati.
 Lathe, 18" x 8" Lehman.
 Lathe, 20" x 9" Lehman.

Lathe, 20" x 14" Powell.
 Lathe, 23" x 12" Blaisdell.
 Lathe, 24" x 14" Niles.
 Lathe, 48" x 16" Sellers.
 Miller, No. 25 Bilton plain.
 Miller, No. 2 Brown & S., univ.
 Miller, No. 14 American universal.
 Miller, No. 7 Becker Lincoln type.
 Miller, No. 34 Fox.
 Miller, No. 3 Becker vertical.
 Nut tapper, 6-sp. 14" Acme semi-auto.
 Pipe machine, 4" Oster.
 Pipe machine, 2" Oster.
 Pipe machine, 6" Oster.
 Pipe machine, 8" Curtis & Curtis.
 Pipe machine, 8" Jarecki mtr. driven with 5 h. p. 1200 r. p. m., a. c. motor connected.
 Planer, 50" x 50" x 18" Betts.
 Presses, approximately 50, assorted sizes, Waterbury-Farrell Foundry, weights approx. 2,000 to 5,000 lbs.
 Presses, Toledo No. 53 straight sided power, 39" stroke, (7).
 Press, No. 3 Toledo inclinable.
 Press, No. 2 Rockford inclinable.
 Punch and shear, Beloit No. 9-B double end, with architectural jaw and angle shears.
 Radial drill, 4" Western, gr. box dr.
 Riveter, 8" x 8" Vulcan.
 Saw, 6" Nutter & Barnes circular.
 Saw, No. 15 Lea-Simplex circular metal.
 Screw mches. No. 1 Garvin, w. l., (5).
 Slotter, 12" stroke Bement.
 Turret lathe, No. 64 Bardon & Oliver, wire feed, cabinet base.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., 28th St. & A. V. R. R., Pittsburgh, Pa.
LATHES.

60"x26" Gleason, triple geared.
48"x32" N. B. P., triple geared.
48"x28" Niles, c. r.
48"x26" Pond, triple geared.
28"x12" Boye & Emmes, q. c. g., d. b. g.
28"x12" Pittsburgh, dbl. b. g.
28"x20" 6" Putnam, b. g., c. r.
28"x10" 6" Walcott, q. c. g.
24"x16" 6" Johnson lathe.
19"x10" LeBlond, motor drive.
19"x 6" Bullard, c. r., b. g.
18"x 8" Mueller, q. c. g.
18"x 8" Sidney, q. c. g., d. b. g.
18"x 8" Rahn-Mayer-Carpenter.
16"x 6" Columbus, q. c. g., new.
15"x 8" Schellenbach, d. b. g., h. s.
14"x 6" Hendey, q. c. g.
13"x 6" South Bend, b. g., h. s.
3"x36" J. & L. turret.
2"x24" J. & L. turret.
24"x 6" Gisholt turret, 6 1/2" h. s.
24"x 6" Gisholt tur., 6 1/2" h. s., m. d.
14"x 5" American speed lathe.
18"x7 1/2" Wood lathe.

PLANERS AND SHAPERS.

20"x20"x51" planer, 1 hd.
24"x24"x8 Chandler planer, 1 head.
48"x48"x2" Pond planer, 4 heads.
48"x48"x12" Sellers, box bed, heavy duty planer, 4 hds., with motor.
72"x56"x12" Betts planer, 2 heads.
14" G. & E. sgl. grd. shaper.
16" American b. g. shaper.
24" Cincinnati b. g. shaper, m. d.
24" Walcott geared; Stockbridge.

DRILLS AND BORING MILLS.

20" Champion, new, pl. w. & l.
20" Silver, new, b. g., p. f.
32" Gould-Eberhardt, b. g., upright.
34" Prentice, b. g.
35" Snyder b. g. drill.
40" New Haven, b. g. drill.
3", 5" 6" & 7" Prentice radial drills.
6", 7" & 8" Pond radial drills.
3" Fosdick, 9" Baush radial drills.
No. 1 Myers 10" sensitive drills.
Burke Nos. 0 & 1 sensitive drills.
10" Dwight-Slate sensitive, floor.
14" Floor type sensitive.
30" Warner-Swasey boring mill.
36" Bridgeport boring mill.
42" & 50" Bullard bor. m., 2 heads.
72" Pond boring mill, 2 heads.
90" Niles boring mill, 2 heads.
10" Pond boring mill, 2 heads.
10/16" Betts boring mill, 2 hds.

PUNCHES, SHEARS.

50" throat Reade sgl. end punch and shear; massive construction.
No. 45 Buffalo punch, 3 1/2".
No. 4 Doelger & Kirsten alligator shear, cap. 4 1/2" round soft steel.
Garrison m. d. alligator shear, 15" knife, cap. 3" square, 36000 lbs.
Lewis m. d. alligator shear, 24" knife, cap. 3 1/2" square, weight 50000 lbs.
Morgan plate shear, 90"x1" thick.
Garrison plate shear, cap. 3"x81" m. d.
Waterbury-Farrel rotary sh., 14" thr.

PRESSES AND ROLLS.

Mesta plate shear, cap. 4"x156".
Canton alligator shear, 1 1/2" cap.
Carlin alligator shears, 2 1/2" cap.
Niagara No. 136 power sq. shear.
Schatz punch and shear, 7 1/2" throat.
No. 56 dbl. housing knuckle press.
Stiles No. 3 inclinable press.
Bliss No. 18 o. b. l. power press.
Bliss No. 76 1/2 s. s., d. g. press, 8" str.
Corry Mch. Co. press, 12" stroke.
Straight-side punch press, 8" str.
Ferracute foot presses.

MISCELLANEOUS.

Air compressor, No. 0 Au-To 3"x4".
Air compressor, 8"x8" hor. b. d.
Band saw, Greaves-Klusman 36".
Band saw, Kane-Roach 30".
Blower, Sturtevant, No. 4, volume.
Blowers, Buffalo No. 7-8 vol.
Bolt cutter, Landis 1 1/2".
Braxing table, all iron, 17"x29 1/2"x31".
Bulldozer, No. 4 Williams-White.
Chain belt, 16"x8"x1 1/2" p. and gear.
Cold saw, No. 17 Higley, 20" saw.
Cold saw, Wagner, size 18 type 3.
Cornice brake, Robinson 8".
Crane, 10" I-beam, 12'3" span.
Cranes, portable 2 & 2 1/2 ton.
Engine, gas, 15 h. p. Fenner.
Forge, No. 41 Champion new.
Grinder, Greenfield cutter & tool.
Grinder, Diamond No. 3 wet tool.
Grinders, Plymouth Nos. 13, 14, 17.
Hammer, 1500-lb. Bement, drop.

Hammers, 2500 lb. Chambersburg, dbl. leg st. forging; 100 lb. belt pwr.
Heading, upset & forg. mch. 3" Nat'l.
Hoist, contractor's steam, with 8 h. p. boiler & 5 h. p. engine.
Index centers, 12" B. & S. univ.
Miller, LeBlond No. 3 plain.
Miller, Garvin No. 12 plain.
Miller, Cincinnati No. 3 plain.
Paper cutter, Golding 36".
Pipe machines, 3", 4", 8".
Polishing stand, d. end, 42"x1 1/2" arbor.
Polishing stand, Cuyahoga dbl. end.
Presses, Ferracute F. P., 2" str.
Ripsaw, table, 49"x30".
Roll lathe, United Engr. 26"x18".
Saw, West Haven, hack, 6"x6".
Slotter, Niles 15".
Straightening rolls, 84x10 Cleveland.
Tapping machine, Baker.
Wiring machines, Pexto, bench.

SECOND-HAND MACHINERY

FOR SALE BY

McDonald Machinery Co., 1531-33 N. Broadway, St. Louis, Mo.

"Machinery is our Middle Name"

Air compressors, 4x4, 6x6, 8x8.
Boring machine, Rockford horiz.
Cold saw, Lea-Simplex No. 18.
Cut-off mchs., Davis 6", H. & R. 4".
Disc sanders, Besly 8", Gardner 14".
Drill presses, 14", 16", 20", 21", 24".
Drill presses, 2, 4, 5, 6 spdl., h. s., b. b.
Grinders, cylindrical, surface, knife,
univ., centerless, emery stands.
Keyseaters, Burr No. 4, Davis No. 2.
Lathes, q. c. g. Bridgeford, S. Bend,
Whitcomb-B., Fay & Scott, Brad-
ford, 12" to 37", 6" to 10' beds.

Lathes, gear head, axle, Lo-Swing.
Milling mchs., Bristol, Fox, Becker,
Hendey, Kemp Smith, Steptoe,
Ohio, plain and universal; Becker
s. d. vertical; Briggs B-72".
Planer, 24"x24"x6' Ohio.
Presses, Niagara, Swaine, Ferracute,
Bias straight and inclinable.
Screw machine, Foster, hand.
Shapers, 16, 20, 24" Cincinnati b. g.,
24" Gould & Eberhardt.
Wood-Work'g & Sheet Metal Tools.
Complete Heat Treating Plant.

FOR SALE BY

A. D. White Machinery Co., 108-114 N. Jefferson St., Chicago

ENGINE LATHES.

14"x 6' Smurr & Kamen.
18"x 7' Chard, d. b. g., p. c.
18"x 9' Bell, d. b. g., p. c.
20"x 8' Hamilton, d. b. g., s. q. c.
20"x 8' Lodge & Shipley, grd. hd.
20"x 8' Reed, s. b. g., p. c.

20"x 8' Reed, motor driven.
22"x10' Davis, d. b. g., q. c.
32"x10' Pond, s. b. g., p. c.
34"x10' Putnam, s. p. g., p. c.
38"x14' Fifield, s. b. g., p. c.

MILLING MACHINES.

No. 0 Rockford, plain.
No. 25 Becker, horizontal.
No. 1 Newton slab.

Model AB Becker, vert., motor dr.
Type "A" Briggs (2).

DRILL PRESSES.

20" Mechanics, friction.
26" Barnes, sliding head.
28" Barnes, sliding head.
26" Aurora, sliding head.

2 spindle Guarantee, h. s., b. b.
4 spindle Reed sensitive, 1" cap.
24" No. 24 Foote-Burt heavy duty.
2 spindle 24" Barnes, all grd. gang.

PUNCH PRESSES.

No. 0 American Can.
No. 8 & No. 11 Bliss auto. button
presses.

19" throat geared punch.
New Swaine o. b. l. presses Nos. 27,
29, 31, 33, 35 and 37.

TURRET LATHES AND SCREW MACHINES.

No. 3 Foster, plain head.
20"x5' Bridgeport, (2).
20"x8' Fay & Scott universal.
22"x5' Reed.
21" and 24" Gisholts.
3x36" Jones & Lamson.
16"x16" Milholland.
1" Biggs (2).
No. 1 Garvin, hand, (4).
No. 1 B. & S. auto. 1" (2).

No. 3 Stecher, hand, (4).
16"x5' Drees Fox.
18"x8' American Fox.
18"x8' Springfield Fox.
7/16" Cleveland, ratchet feed.
1" Cleveland, semi-auto.
1" Cleveland, friction.
1" Cleveland, jigger.
1" Hartford, (2).
1" Cleveland, jigger.

BOLT CUTTERS AND PIPE MACHINES.

14" Acme, double head.
32" Acme single head, (2).
4" Acme single head.

4" Saunders (2).
8" Eaton, Cole & Burnham.

MISCELLANEOUS.

Blower, No. 7 Sturtevant, high press.
Boring mch., 24" bar, Binsse horiz.
Gang slitter, takes 21" sheets.
Gang slitter, takes 29" sheet.
Gas engine, 35 h. p. Columbus.
Gas engine, 55 h. p. Bruce-McBeth.
Grinders, No. 2 Woods tool & cutter
Grinder, No. 2 Oesterlein tool & cut.
Grinder, 12x32 Landis plain.

Grinder, Springfield, 2-wheel wet.
Grinder, Leland & F., wet.
Planer, 30"x30"x10' Pond, 1 head.
Profiler, 2 spindle Putnam.
Riveter, 1" Shuster.
Saw, No. 5 1/2 Nutter-Barnes.
Screw slotter, Garvin hor. 3/16 to 1".
Tapper, No. 3 Garvin, auto.

SECOND-HAND MACHINERY

FOR SALE BY

Chas. N. Braun,

825 Calhoun St., Fort Wayne, Ind.

Lathe, 18"x8" Reed engine lathe, h. s. \$ 225.
Planer, Ohio, table 9' long by 23 1/2" wide 1,200.

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

43"x17 1/4" Bement-Miles.
42"x25" 6" Putnam.
42"x26" Johnson d. b. g., t. a.
42"x16" Niles.
37"x14" Johnson d. b. g., q. c. f., t. a.
32"x12" Pittsburgh, heavy duty, q. c. g.
26"x16" 6" American, q. c. g.
27"x12" Bullard.
26"x11" Wickes, q. c. g.
28"x10" Niles, q. c. g.,
25"x14" Hendey, q. c. g., taper attachment, oil pan, (2).
24"x14" Porter.

21 1/2"x8" LeBlond.
20"x8 6/8" Walcott, d. b. g., q. c. g., (3).
20"x 8" Whitcomb Blaisdell, q. c. g.
20"x10" 6" American pat. hd., q. c. g.
18"x 8" Prentice, q. c. g.
19"x10" Draper, patent head.
18"x 7" Chard, d. b. g., semi q. c. g.
18"x6" to 8" lathes. (6).
17"x 6" Lodge & Shipley, q. c. g.
16" Lathes, (10).
14" Lathes, (19).
And many others.

TURRET LATHES.

3 1/2x28" Pond, triangle.
3x36" Pratt & Whitney, hollow hex.
20x7" 6" Pratt & Whitney, back grd.
19"x7" Fay & Scott, back grd.
19"x6" American ext. gap, bk. grd.
No. 22 1/2" Garvin Monitor.

17"x6" Warner & S., bk. grd., (2).
16"x6" Johnson, back grd.
No. 5 Bardons & Oliver, back grd.
No. 3 Bardons & Oliver back grd.
14 1/2"x5" 3" Pratt & Whitney, (2).
No. 3 Foster Kimball.

DRILL PRESSES.

5' Bickford radial.
40" Barnes horizontal radials, (2).
36" Bickford radial, circular base, motor driven.
18" 4-spindle 2-housing, Foote-Burt.
14" 6-spindle Allen sensitive.
14" 4-spindle Allen sensitive.
40" Lodge & Davis, b. g., sliding hd.
26" b. g., sliding head drill.

26" Hoefer, tapping attachment.
24" Hoefer, tapping attachment.
20" Barnes, geared head.
20" Hoosier, new, (3).
20" Champion, new, (6).
12" Allen, bench.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

38"x6" Ingersoll horizontal slab.
No. 5 Cincinnati, table 9 1/2x50 1/2".
No. 15 Garvin, table 12x42".
No. 3 Becker Brainard, table 12x40".
No. 3 Hendey-Norton, q. c. g.
No. 2B Heavy, Brown & Sharpe, single belt drive, q. c. g.

No. 1 1/2 Brown & Sharpe univ., b. s.
No. 0Y Brown & Sharpe plain, (2).
Whitney hand miller.
No. 27 Industrial Works, Lincoln type, table, 7x27".
Gooley & Edlund, 7 1/2x46" table.

PLANERS AND SHAPERS.

48"x48"x16" Pond planer, 3 heads.
30"x30"x8" Putnam planer.
26 1/2"x26" x 6" Hendey planer.
48" Morton draw-cut shaper.

39" Pedrick & Ayer, open side.
30" Cincinnati.
16" Gould & Eberhardt shaper.
14" Warren shaper.

MISCELLANEOUS.

Bolt machine, 1/4" National.
Boring mill, 100" Sellers, vert. dbl. hd.
Boring mill, car wheel, 60" Newton.
Boring, drilling and milling machine, 17 1/2" Bement Niles horizontal.
Grinder, 13 1/2"x3" Landis universal.
Grinder, disc, No. 17 Bealy.
Grinder, disc, No. 1 Bealy.
Hammers, 60 lb. Bellefonte upright; 2.
Keyseaters, 18" stroke Morton, (2).
Keyseater, Mitts & Merrill No. 5.

Keyseater, Mitts & Merrill No. 2.
Pipe machine, 20" Saunders.
Pipe machine, 6" Cox.
Punch presses, all sizes, (105).
Punch & shear, Industrial Wks. d. e., capacity 1 1/2" in 1/2", squaring 1 1/2"x8".
Slotter, Newton, 20"; cir. table.
Slotter, Newton, 18"; cir. table.
Slotter, Bement 10"; cir. table.
Tooth rounding machine, Schuchardt & Schutte.

Large assortment of General Machinery. Send for Complete List.

SECOND-HAND MACHINERY

FOR SALE BY

A. M. Stoehr Machinery Co., 844-846 North Wells St., Chicago, Ill.

Blue printing and drying machine, continuous, 42" cap., 220 volt, d. c.
Boring mill, 30" Colburn, one head.
Boring mill, 34" King, one head.
Boring mill, 48" Bickford, one hd.
Butt welders, Thomson No. 10 A6-7.
Gear cutter, 24" Gould & E.
Gear cutter, 60" Gould & E.
Gear hobber, No. 3 Barber-Colman.
Grinder, 12"x32" P. & W.
Grinder, No. 16 Blanchard, 30" ck.
Grinder, 3x18 Norton.
Grinder, No. 11x30 Brown & Sharpe.
Lathes, all sizes.
Magnets, lifting, 24" and 45".
Pipe machine, 6" Jarecki, mtr. dr.

Milling machines, No. 1 Kempamith univ., No. 25 Becker plain, No. 13 Garvin plain, No. 1 Wis. hand.
Planer, 30x30x12' Gray, 1 head.
Planer, 36x36x12' Davis, 1 head.
Presses, No. 3 Bliss, No. 4 American Can, No. 57 Toledo grd.
Punch & shear, No. 13 W. W. & Co., 38" throat, arct. jaw, 14" in 1".
Screw machines, Nos. 1, 2 & 3 P. & W., Nos. 52 and 53 Acme auto., 14" and 2" Cleveland single spindle, 24" Gridley, single spindle.
Shaper, 20" Ohio, back geared.
Shaper, 24" G. & E. back geared.
Tapping machine, Tuttle, 4" cap.

FOR SALE BY

Brownell Machinery Co.,

11-13 Eddy St., Providence, R. I.

Boring mill, No. 1 Beaman & Smith.
Boring mill, No. 1 Cleveland.
Boring mill, 34" King vertical.
Boring mill, 54" Bullard vertical.
Drill, 1-spindle Allen.
Drill, 3-spindle Reed-Prentice.
Drill, 4-spindle Reed-Prentice.
Drill, 25" Hoefler.
Drill, 26" Henry & W. radial.
Gear generator, 11" Gleason.
Gear shaper, No. 612 Fellows.
Grinder, No. 6 Bryant chucking.
Grinder, 10"x50" Norton plain.
Hammer, power, 40 lb. Bradley cushioned helve.
Lathe, 12"x12x5' Davis tool room.

Hammer, power, 50 lb. Bradley up-right helve.
Hammer, power, 100 lb. Bradley upright helve.
Lathe, 14"x 6' Star.
Lathe, 20"x 8' Whitcomb-Blaisdell.
Lathe, 23"x10' David Pond.
Milling mch., No. 3 Thurston d.c.
Milling machine, No. 2-Y B. & S.
Milling mch., type A Briggs mfg.
Milling mch., No. 1 Cleveland univ.
Planer, 17"x17"x4' Whitcomb.
Planer, 22"x22"x5' Whitcomb.
Planer, 30"x30"x8' Whitcomb.
Rolling mill, 5x8 Standard.
Wire coilers, Nos. 2 & 3 Standard.

FOR SALE BY

W. P. Little Co.,

1616 Columbus Road, Cleveland, Ohio

LATHES.

14"x 6' LeBlond, c. r.
14"x 6' Von Wyck, p. r.
16"x 8' LeBlond, gap, c. r.
20"x10' Rahn-Mayer, c. r.

10"x108" Lo Swing.
20"x10' Lodge & Davis, p. r.
26"x 9' Bridgeford, d. b. g., & q. c. g.
30"x10' plain turning.

SHAPERS.

20" Kelly, b. g., crank.

DRILL PRESSES.

2-spindle Reed sensitive
4-spindle Fox sensitive (4).

CYLINDER GRINDERS.

No. 23 B. & S. cylinder grinder.

MILLING MACHINES.

No. 4 Hendey Lincoln pattern.

PUNCH PRESSES.

No. 87 Zeh & Hanneman.

MISCELLANEOUS.

Blower, No. 8 Sturtevant.
Broach, No. 3-A Lapointe.
Foot shear, 30".
Screw machine, No. 4 B. & O.

Slotter, 8".
Spline miller, 4" P. & W.
Tapper, No. 1 Garvin automatic.
Turret, 18"-30" Gisholt, gap.

We buy Used Machinery. What have you to sell?

SECOND-HAND MACHINERY

FOR SALE BY

National Machinery Sales Co.,

Drill, 4-spdl. Barnes, auto qk. ret.
Grinder, No. 2 univ. cutter & tool.
Lathe, 18" x 8" Mueller, q. c. g., 3-st.
Lathe, 24" x 14" Lodge & S. select. hd.
Miller, No. 0 Bristol, hand.

28 N. Desplains St., Chicago, Ill.

Miller, No. 4 Hendey, Lincoln type.
Presses, Nos. 1 and 3 Consolidated.
Shaper, 16" Gould & E., crank.
Shear, 96" Niagara squar., No. 18 ga.
Turret lathe, No. 1 Foster.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

12" x 4' Porter-Cable, c. r., q. c. g.,
pan bed, (4).
14" x 6' Hamilton.
13" x 5' Willard, c. r.
14" x 6' Prybil, stud.

TURRET LATHES AND

18" x 10" Millholland, g. f. h., p. f.
14" Garvin, g. f. h., p. f.
14" Lodge & Davis, plain head.
24" Davis turret boring and chuck-
ing lathe, with forming rest.
23" Lodge & Shipley heavy duty
turret boring lathe.
18" Acme screw mche., p. f. to tur., (3).
No. 2-A Warner & Swasey g. h.
turret lathes, (2).
26" Gisholt heavy duty turret lathe.

DRILLING MACHINES.

Single spdl. upright sensitive, (2).
Single spindle Allen, b. b.
20" Prentice, w. and l.

MILLING MACHINES.

No. 1 U. S. hand, 3-st. cone., c. s. (2).
No. 6 Whitney, hand.
No. 3 Chicago, hand, p. f.
No. 1 Rockford, hand, p. f.
No. 15 Garvin plain, b. g.
No. 22 Garvin, vertical spindle.
No. 1 Cincinnati plain.

GRINDERS.

No. 1 Wilmarth & Morman, surface.
No. 1 LaSalle, plain & surface.
No. 3 Brown & Sharpe, universal.
No. 1 Detroit Centerless.
No. 10 Cochrane-Bly auto. bench
saw filing machine.

HAMMERS.

Coffman post pwr. dr. hammer 25 lbs.

METAL CUTTING TOOLS

Excelsior power hack saw.
12" Burke metal cold saw.

PUNCH PRESSES.

No. 264 Consolidated, geared, dbl.
action cam drawing.
No. 64 Consolidated, stra. side, grd.

GEAR CUTTERS

26" No. 3 Brown & Sharpe auto., (2).
60" Eberhardt, spur.

MISCELLANEOUS.

Boring mche., 23" swing, Star horiz.
Boring mill, 34" Colburn.
Brake, 36" P. S. & W. cornice brake,
29 gauge capacity.

15" x 6' Sebastian, c. r., geared hd.
16" x 6' Reed, r. and f.
15" x 6' Blaisdell, p. r. and t. a.
24" x 14" Boye & Emmes, c. r., 3-step
cone.

SCREW MACHINES.

No. 3-A Warner & Swasey g. h.
turret lathe, (2).
16" Warner & Swasey, plain head,
with air chucks (5).
2" x 24" Jones & Lamson g. h. flat
turret lathe.
No. 00 Brown & Sharpe auto, (4).
No. 0 Brown & Sharpe auto. (6).
No. 2 Brown & Sharpe auto. (3).
1 to 1" Model A Cleveland auto. (2).

20" Buffalo, w. and l.

4-sp. Foote-Burt, adjustable head.

Valley City, pl., with dividing head.
No. 2-B Brown & Sharpe, constant
speed, plain, taper nose.
No. 2 Brown & Sharpe, plain, cone
head, taper nose (2).
No. 6 Becker, vert., rotating table.
12" Pratt & Whitney, horiz., auto.

12" x 66" No. 4 Landis univ. complete.
No. 1 Brown & Sharpe, univ., (2).
Type "DE" Hisey-Wolf internal.
Gisholt tool grinder.
No. 14-16 Besly, wet ring wheel.
6" x 18" Landis, pl., single pulley dr.

Cady belt drop hammer, 100 lbs.

& SQUARING SHEARS.

Higley cold saw.
No. 154 Higley cold saw.

No. 11 Badger, hand.

No. 69-N Bliss, sgl. action cam, grd.
No. 83 Bliss, straight side, geared.

No. 13 Brown & Sharpe auto., (2).

Planers 22" x 22" x 5' Putnam, 1 hd., (3).
Polishing lathes, City Machine Co.
Press, D-301 Ferracute redrawing
and trimming.

SECOND-HAND MACHINERY

FOR SALE BY

B. C. Allen Machinery Co., - 551 W. Monroe St., Chicago, Ill.	
Drill press, 20" b. g., p. f.....	\$ 110.
Drill press, 25" sliding head.....	150.
Drill, 3" American radial.....	725.
Lathe, 11"x 5' Rockford.....	175.
Lathe, 18"x 6' Rahm-Carpen'r.....	250.
Lathe, 18"x 10' Bradford.....	375.
Lathe, 15"x 6' q.c.g., tool room.....	425.
Lathe, 21"x 12' Lodge & D.....	425.
Miller, hand.....	\$ 100.
Punch press, No. 4 Am. Can.....	400.
Punch press, No. 3, solid back.....	200.
Punch and shear, 3"x 1".....	150.
Shaper, 16".....	175.
Thread miller, 3" Lees-Bradner.....	
few.....	400.
Several carloads of bargains.	

FOR SALE BY

The Randle Machinery Co., 1723 Powers Street, Cincinnati, Ohio
ENGINE LATHES.

14"x 7' Fifield, loose change.....	\$ 300.
16"x 10' Monarch, loose change.....	490.
17"x 8' Sidney, q. c.....	500.
18"x 16' Monarch, loose change.....	\$ 725.
20"x 8' Monarch, loose change.....	675.
28"x 12' Putnam semi-q. c.....	975.

PLANERS.

24"x 24"x 7' Niles, one head, belt drive.....	\$ 500.
30"x 30"x 10' Gray, two heads, belt drive.....	1,800.
30"x 30"x 14' American, two heads, belt drive.....	1,500.
36"x 36"x 14' American, two heads, belt drive.....	1,800.
72"x 72"x 20' Cincinnati, four heads, motor drive, with motor.....	11,000.

MISCELLANEOUS.

Boring mill, 60" Niles vert.....	\$2,500.
Boring mill, 10' Niles vert.....	6,000.
Drill pr., 45" upright, b.g.p.f.....	400.
Grinder, No. 60 Head cylinder.....	1,300.
Miller, No. 5 Brown & S. pl.,.....	2,000.
Radial drill, 24" American.....	\$1,000.
Radial drill, 4' Fosdick pl.....	750.
Radial drill, 6' Bausch-H. pl.....	800.
Shaper, 16" Barker b. g. cr.....	450.
Shaper, 24" Barker b. g. cr.....	675.

Send us your inquiries.

FOR SALE BY

Frank Toomey, Inc., 127-131 N. Third St., Philadelphia, Pa.
Machine Tools.

LATHES.

42" Pond car wheel, motor drive.....	
36"x 16' Sidn. y., d. b. g., q. c., new.....	
25"x 19' Sidney, d. b. g., q. c., new.....	
17" & 15" Sidney, d. b. g., q. c., new.....	
16"x 8' Monarch, d. b. g., q. c., used.....	
13"x 5' 6" Carroll, s. b. g., p. c., new.....	
12"x 6' Hendey tool room, t. a.,.....	
chuck, pan bed, draw-in attach.....	

SHAPERS AND PLANERS.

14", 16", 20", 24" Steptoe shapers, new.....	7" Rhodes shaper, new.
20" Cincinnati b. g. used shaper.....	24"x 24"x 8' Hendey planer, 1 head.
16" Queen City b. g. used shaper.....	24"x 24"x 16' Pease planer, 1 head.
36"x 36"x 10' Cincinnati planer, 3 heads, motor.....	16"x 16"x 12' Walter planer, 1 head.

MILLERS.

No. 22 Garvin vertical, used.....	No. 1 Dow, plain, new.
No. 2 Putnam, universal, used.....	No. 4 Brown & Sharpe, plain, used.

DRILLING MACHINES.

42" Standard pl. rad., sp. box, new.....	24" Mechanics, sliding hd., b. g. used.
36" Hamilton, pl. rad., cone dr., used.....	21" Superior, b. g., p. f., new.
32" Superior, s. h., b. g., p. f., new.....	20" Buffalo and Champion, b. g.
28" Superior, s. h., b. g., p. f., new.....	4 spdl. Superior hi-speed, used.

MISCELLANEOUS.

Bolt cutters, Greenfield, 14" and 22" new.....	Keyseaters, Nos. 3 & 4 Catlin, used.
Boring mill, 42" Bullard, vertical.....	Pipe machines, 2", 4", 6" Oster, new.
Boring mill, 3" bar, Binsse, hor.....	Press, hyd., Watson & St., 30 tons.
Grinders, 10"x 36" Norton, pl., used.....	Slotter, 10"-12" Dill, used.
Grinder, No. 1 Fraser, univ., new.....	Turrets, Bardons & O. Nos. 1 & 6, w. f.
Hack saws, 6x6 & 9x9 Peerless, new.....	Turrets, Gisholt 21"
Hammer, 100 lb. Little Giant, new.....	Turrets, Gridley 4-spindle, 24"

SECOND-HAND MACHINERY

FOR SALE BY

P. O. Box 976,

Hartford, Conn.

Bargains for immediate acceptance.

Liberal discount on two or more machines.

These machines are in good order and will be taken down, skidded, slushed, small parts boxed and delivered f. o. b. factory siding. Prices furnished on request:—

Drill, upright, 36" New Haven No. 76.

Drill, 2-spindle geared, 14" W. & R. No. 78.

Drill, single spindle, 20" Blaisdell No. 140.

Gear cutter, automatic, G. & E. No. 117.

Gear cutter, hand, W. & R. No. 118.

Lathe, small wood turning, 12"x3' No. 130.

Planer, 20"x4' Whitcomb No. 187.

Tapping machine, upright, W. & R. No. 133.

Tapping machine, horizontal, W. & R. No. 00, cap. 0 to 1/2", brand new.

FOR SALE BY

Cyril J. Bath & Co.,

1611 St. Clair Ave., N. E., Cleveland, O.

BOLT CUTTERS.

1" Acme style B.....\$ 175. 3" Landis.....\$ 675.

BORING MILLS.

Dietrich & Harvey, 4" bar.....\$4500. 60" Bullard.....\$1750.

24" Bullard vert. turret lathe.....1250. 9' Betts.....5000.

30" Bullard.....580. 10' Niles.....6000.

36" Gisholt.....1250.

DRILLS.

4' Morris plain radial.....\$1250. 20" new Silver, w. & l.....\$ 110.

5' Prentice plain radial.....675. 20" new Silver, b. g., p. f.....130.

6' Fosdick plain radial.....1000. 20" Ryerson, b. g., p. f., (8).....45.

14" No. 21 Avey 2-sp., s. p. f.....775. 28" new Sibley, sl. hd., b. g., p. f.....385.

GRINDERS.

New Yankee drill, 24".....\$ 175. 14x50 Norton plain.....\$1750.

18" Bryant internal.....475. 16x48 Cincinnati univ.....875.

LATHES.

New 9"x3' Johnston.....\$ 195. 20"x10' new Wicks.....\$1250.

16"x 6' LeBlond.....375. 22"x20' New Haven.....750.

16"x 8' Bradford, c. r.....375. 42"x20' Boye & Emmes.....2750.

18"x 9' new Lehmann.....985.

MILLERS.

No. 2A Brown & Sharpe univ.....\$ 775. No. 7H Becker Lincoln.....\$ 250.

No. 3 Brown & S. pl., (2), ea.....575. Type A Briggs Lincoln (2), ea.....325.

No. 3B heavy B. & S. pl., (2) ea.....875. No. 2 Brown & Sharpe vert.....475.

No. 3 heavy LeBlond univ.....1350. No. 3 Cincinnati vert.....1250.

No. 12 B. & S. Lincoln (2), ea.....85. No. 4 Cincinnati vert.....1400.

PLANERS.

24"x24"x 6' Gray.....\$ 475. 60"x60"x17' Betts.....\$1650.

24"x24"x 6' new Liberty.....1500. 60"x60"x20' Sellers.....2500.

30"x30"x 8' Niles Bement-P.....1350. 72"x72"x20' Cincinnati.....

30"x30"x 8' Gray.....850. 84"x60"x30' Pond.....\$3000.

42"x42"x10' Cincinnati.....3400.

PUNCHES, SHEARS AND PRESSES.

Toledo gate shear, 10"x11 gauge.....\$1250.

No. 4 Loushough Jordan, o. b. inclinable.

SHAPERS AND SLOTTERS.

20" new Whipp b. g. cr. shaper.....\$ 655. 10" Newton crank slotter.....\$ 750.

20" Ohio b. g. crank shaper.....575. 16" Betts crank slotter.....1250.

New 32" Cin'ti crank shaper.....1675.

TURRET LATHES AND SCREW MACHINES.

11" No. 3 Foster screw mch.....\$ 325. 21" Gisholt turret lathe, 3/4" hole.....\$ 975.

3"x36" Pratt & W. turret lathe.....475. 24" Gisholt turret lathe, 1/2" hole.....1350.

MISCELLANEOUS.

Cold saw, No. 111 Higley 4" rd.....\$ 75. Dividing hds., 12" Cincinnati.....\$ 125.

Crankshafts for No. 59 Toledo and Welder, Toledo, spot, 1/4" ca-

No. 77 Bliss presses.

capacity, 12" gap.

SECOND-HAND MACHINERY

FOR SALE BY

Mid-West Machine Tool & Supply Co.,

321-323 E. Fourth St.,

Davenport, Iowa

Slightly used machines.

Special bargains.

Priced to sell.

Band saw, 30" American.
Boring mill, 42" Bullard, 2 heads.
Boring mill, No. 31 Lucas.
Drill, 1-sp. Avey h. s. ball-bearing.
Drill, 4-sp. Allen ball-bearing.
Drill, 24" sliding head Aurora.
Drill, 3" Morris radial.
Grinder, Abrasive, surface.

Grinder, No. 2 Oakley, tool & cutter.
Lathe, 24"x12" Lodge & Shipley.
Miller, No. 2 Cincinnati plain.
Pipe threading mche., No. 7 Jarecki.
Planer, 42"x42"x8', 2 heads.
Punch press, No. 2 V. K. & V., o. b. i.
Shaper, 20" Cincinnati, back geared.
Thread miller, Taft-Pierce, (new).

If you do not see what you want, write us. Our stock is complete.

FOR SALE BY

Jones Machine Tool Co.,

435 E. Pearl St., Cincinnati, Ohio

ENGINE LATHES.

16"x 6' Lodge & Shipley, q c. \$ 600.	24"x16 S. & B., l. c. \$ 775.
18"x 8' Prentice, geared head. 750.	24"x14' Boye & Emmes, q c. 1450.
17"x 8' G. & K., with turret. 550.	36"x24' American, qk. change.
18"x10' Boye & E., 3 step, q. c. 750.	24"x12' Greaves & Klusman. 850.

MILLING MACHINES.

No. 2 Cincinnati plain. \$ 375.	No. 3 Milwaukee plain. \$ 900.
No. 3 Cincinnati plain. 650.	No. 3 B. & S. plain s. p. drive. 900.
No. 4 Cincinnati plain. 1200.	No. 3H LeBlond universal. 1650.

MISCELLANEOUS

Bolt cutter, 1 1/2" Nat'l. \$ 375.	Planer, 32"x10', 2 heads. \$ 900.
Drill, 4' Fostick radial. 700.	Press, Bliss No. 21 o. b. i. 475.
Drill press, 24" Aurora. 185.	Press, C54 Ferracute, horning. 375.
Drill pr. 28" Superior, b. g., p. f. 375.	Press, No. 74 1/2 Bliss s. s., 4" str. 675.
Grinder, No. 60 Heald cylinder 1250.	Screw mche., 1 1/2" Dresses, hand 200.
Grinder, No. 23 B. & S. cyl. 1000.	Shaper, 18" Barker crank. 450.
Keyseater, No. 2 Davis. 100.	Shaper, 28" American crank. 850.
Keyseater, No. 2A Mitts & M. 275.	Shaper, 16" Stockbridge cr'k. 375.

Send for our Stock List just off the press.

FOR SALE BY

E. L. Easley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

26" W. F. & J. Barnes, sliding hd.	2 spdl. No. 1/2 Avey, h. s., b. b.
4 sp. Allen high speed b. b. drill.	2 1/2" Fostick plain radial.

LATHES.

18"x8' Whitcomb Blaisdell, q. c. g.	21"x8' Cisco, q. c. g., d. b. g.
18"x10' Prentice, q. c. g.	21"x10' South Bend.
20"x14' Putnam.	30"x14' Niles.

MISCELLANEOUS.

Boring mill, 60" Bullard vertical.	Planer, 36"x36"x12' Rockford, new.
Boring mill, 42" Bullard vertical.	Planer, 62"x56"x28' Gray, 2 heads.
Gear cutter, No. 3 B. & S. auto.	Punch pr., No. 4 & 4 1/2 Niagara, o. b. i.
Grinder, 12"x24" Modern plain.	Punch press, No. 1 Toledo, o. b. i.
Grinder, No. 1 Sellers, pat. tool.	Punch press, No. 57 Toledo, straight side, geared.
Grinder, No. 23 Whitney cylinder.	Punch pr., No. 38 Niagara, geared.
Grinder, 12x48" Cincinnati, cyl.	Punch pr., No. 37 1/2 Bliss, pl., st. sd.
Grinder, 20"x70" Landis plain.	Punch pr., No. 61 Bliss, o. b., reduc.
Grinders, No. 10 Besly 18" dbl. disc, (3).	Saw, Smith & Post cold saw.
Hammer, 800 lb. W.W., board drop.	Screw machine, No. 0 B. & S. semi-auto, hand.
Hammer, steam, 800 lb. Massillon.	Screw mch., 2"x24" Cleveland auto.
Miller, No. 2 Milwaukee universal.	Shear, No. 152 Niagara 52", power.
Miller, No. 2-B Fox plain.	Shear, 72" Loy & N., pwr., 1/2" cap.
Planer, 36"x36"x8' Betts.	
Planer, 36"x36"x12' Woodward-P.	

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co., - 124 S. Clinton St., Chicago, Ill.

Special Bargains—in Stock.

MILLING MACHINES.

No. 2 Brown & Sharpe vertical.
No. 3 Ingersoll vertical.
No. 4 Becker horiz., dbl. b. g. drive.
No. 2 Cincinnati universal.

No. 2 Brown & Sharpe universal.
No. 1 Kempsmith universal.
No. 23 Bilton plain, incl. div. head.
No. 1 Knight drill, milli'g, b.g., p.f.d.

LATHES.

32"x12' Fish, 24" holes, comp. rest.
38"x14' Niles, dbl. b. g., qk. ch.
21"x 8' LeBlond, dbl. b. g., qk. ch.

18"x 8' Hamilton, q. c. g.
18"x 8' Reed, taper attachment.
16"x 8' Rockford q. c., tap., collets.

TURRET LATHES AND SCREW MACHINES.

Jones & Lamson 2", (2).
Pratt & Whitney 2"
Pratt & Whitney 1 1/2"
Libby 3"; Warner & Swasey 2A.

1" Acme.
3/8" Bardons & Oliver.
1 1/2" Foster.
3/4" Brown & Sharpe automatic.

GRINDERS, UNIVERSAL AND PLAIN.

22"x7" Landis univ.
18"x66" Landis plain.
10"x20" Landis; cam grinding att.

10"x44" Ott universal.
10"x30" Dauber & Kratch univ.
7"x30" Leland universal.

RADIALS AND DRILL PRESSES.

6' Reed Prentice, tapping att.
24" Henry & Wright high speed.

24" Barnes camel back, h. sp.
2 sp. Barnes, 20".

MISCELLANEOUS.

Band saw, 30" metal.
Bolt cutter, 3" Acme.
Furnaces, cyanide, gas; blower, etc.
Gear cutter, Brown & Sharpe No. 5.

Rollers, 40".
Shear, 42" power square, 1 1/2" cap.
Shear, 6' power square, 16" ga.
Slitters, 30"—48" multiple.

We are prepared to estimate on Building Special Machines

from submitted plans and specifications—making special tools.
We have the experience, men
and "know how."

Let us have your inquiries

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P. O. Box 1088,

HARTFORD, CONN.

ReMANUFACTURED -(ORIGINATED BY US)- MACHINE TOOLS

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EVERY ReMANUFACTURED MACHINE TOOL in our place represents an unusual BARGAIN. A card will bring our latest GREEN LIST containing 2000 machine tools. We welcome inspection of our plant and our process.

LATHES.

- 1-13"x 5' Willard.
- 2-14"x 6' Carroll-Jamieson, q. c. g.
- 1-15"x 6' Sidney, q. c. g.
- 6-16"x 6' Reed.
- 8-17"x 6' LeBlond mfg. auto.
- 20-18"x 8' Boye & Emmes, q. c. g.
- 20-19"x 8' LeBlond, q. c. g.
- 13-20"x 8' LeBlond, q. c. g.
- 89-20"x 8', 12x16' American, q. c. g.
- 3-20"x10' Lodge & Shipley, q. c. g.
- 15-each 26"x9', 10', 12', 14', 16', 18' and 20' Bridgeford, q. c. g.
- 6-30"x11' American, geared head.
- 1-36"x19' Johnson, triple geared.
- 15-36"x30' Pittsburgh, q. c. g.
- 3-36"x42' LeBlond, q. c. g.
- 1-45"x24' Pond, triple geared.

DRILLING MACHINES.

- 3-No. 11 Pratt & Whitney multiple.
- 1-2-spindle Henry & Wright.
- 3-3-spindle Allen ball bearing.
- 3-4-spindle Allen ball bearing.
- 15-6-spindle Allen ball bearing.
- 1-each 3', 3½', 4' and 6' Western Radials.

BORING MILLS.

- 1-26" Gisholt, vertical.
- 1-34" Colburn, vertical.
- 1-10" Niles vertical.
- 1-No. 3-A Universal, horizontal.

GRINDERS.

- 2-4"x20" Morse plain.
- 4-6"x32" Norton plain.
- 2-12"x36" Modern plain.
- 1-14"x50" Norton plain.
- 1-20"x96" Landis plain.
- 1-No. 2 Brown & Sharpe surface.
- 1-No. 14 Pratt & Whitney surface.

MILLERS.

- 50-No. 6 Whitney hand.
- 1-No. 9 Brown & Sharpe plain.
- 1-No. 26 Ohio plain.
- 1-No. 2 Ohio plain.
- 1-No. 24 Ohio universal.
- 1-No. 2 Cincinnati plain.
- 1-No. 1 Kempsmith universal.
- 2-No. 2 Kearney & Trecker plain.
- 1-No. 3 Brown & Sharpe plain.
- 2-No. 4 Cincinnati plain.
- 1-No. 4 LeBlond, plain.

SHAPERS AND PLANERS.

- 2-each 16", 20" and 24" Walcott back geared crank.
- 1-24"x26"x 8' American planer.
- 1-40"x30"x 6' Gray planer.
- 1-72"x72"x14' Niles, 4 heads.
- 1-96"x72"x20' Bement-M., 4 hds.

TURRET LATHES.

- 8-1" Pratt & Whitney.
- 8-1" Warner & Swasey.
- 3-1½" Warner & Swasey.
- 1-2" Brown & Sharpe.
- 2-3x36" Jones & Lamson.
- 1-3½" Foster.
- 1-24" Gisholt.

MISCELLANEOUS.

- 7-No. 2 Loshbough & Jordan Inclined Press.
- 5-Schuchardt & Schutte Gear Hobbers.
- 2-No. 3 LaPointe Broaches.
- 1-30" Flatler Gear Cutter.
- 1-No. 13 Brown & Sharpe Gear Cutter.
- 14-No. 1 Adams Farwell gear hobber.
- 1-No. 61 V. & O. Press.

Write for our Green List describing these and many others

HILL, CLARKE & CO. OF CHICAGO
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Price—Way Down Quality—The Best

VERTICAL BORING MILLS

- 120" Niles, 2 swivel heads.
- 80" Niles-Bement-Pond, 2 sw. hds.
- 72" Niles, 2 swivel heads.
- 64" Poole, 2 swivel heads, thread cutting.
- 44" Niles, 1 swivel hd., 1 tur. head.
- 42" Putnam carwheel, hub facing attachment.
- 36" Niles carwheel with crane.
- 32" Rogers, swivel turret head, universal jaws.

HORIZONTAL BORING MILLS

- Bement cylinder, 8" bar.
- Barrett No. 2 cylinder, 5" bar.
- Beaman & Smith No. 2 floor boring, drill and milling machine, 4" bar.
- Lucas "Precision" boring, drilling and milling machine, 3 1/2" bar.
- Niles boring drilling mche., 4" bar.
- Betts boring drilling mche., 5" bar.
- Bement bor. drilling mche., 3 1/2" bar.
- Newark bor. drilling mche., 3" bar.
- Bement bor. drilling mche., 3" bar.
- Bement bor. drilling mche., 2 3/8" bar.
- Barnes drill'g tap. mch., 2 3/16" bar.
- Underwood type 4 1/2" bar. floor plate 8'x9'.

LATHES

- 21' triple geared face plate drive Pit Lathe for slotting, facing & boring.
- 60"x30' Fifield, face plate dr., 22" cent.
- 62"x22' Putnam, triple grd., internal face plate drive, 13" centers.
- 62" Pulley, triple grd., face plate dr.
- 48"x26' Schumacher & Boye.
- 36"x20' Putnam, triple geared, face plate drive.
- 36"x20' Fay & Scott.
- 30"x12' Niles-Bement-Pond, geared head, heavy duty, quick change.
- 24"x14' Prentice, geared friction head, quick change.
- No. 3 Niles-B.-P. dbl. Axle Lathe.

NEW DOUBLE LEATHER BELTING

- 5" center stock.....\$.84 per ft.
- 10" center stock..... 1.68 per ft.

PUNCHES, SHEARS, ETC.

- Pels Beam Shear, cap. 15" I beams.
- Lennox Rotary Shear, 30" thr. 3" cap.
- Quickwork Rotary Shear, 48" throat, 4" capacity.
- Quickwork Rotary Shear, 36" throat, 3/16" capacity.
- Two Stoll 11" Squaring Shears, No. 16 gauge.
- 156" Covington Gate Shear, cap. 1", 18" gap.
- No. 121 Toledo Boiler Maker Punching & Riveting Machine.
- Long & Allstatter Hor. Punch, capacity 1 1/2" to 1".
- Rock River Bulldozer, cross head 16"x66", stroke 20".
- No. 2 Williams & White Cold Bending & Straightening machine.
- No. 6 Beatty S. E., Punch, 25" Throat, double gap.
- No. 7 Beatty S. E. Punch 15" throat.
- 2" Acme Forging Machine.
- 1" Acme Hot Nut Punching Mche.

DRILLING MACHINES

- 8' Bickford Univ. Radial, gear box.
- 6' Bickford Plain Radial.
- 6' Niles-Bement-Pond Radial, tapping attachment, heavy duty.
- 6' Fosdick Plain Radial tapping att.
- 4' Fosdick Plain Radial tapping att.
- 4' Gang Plain Radial, tapping att.
- 20 spindle Fox Multiple, capacity 1 1/2".
- 14 spindle Fox Multiple cap. 1 1/2" in 1".
- 14 spindle Baush Multiple, cap. 1".
- 8 spindle Baush Multiple.

PLANERS

- 96"x96"x37' Planer, 4 heads.
- 14' Hilles & Jones Plate Planer.
- 72"x72"x14' Pond, 4 heads.
- 72"x70"x14' Sellers, 3 heads.
- 48"x48"x14' Patch, 4 hds., latest type.
- 42"x42"x14' Pond, 4 heads.
- 40"x36"x11' New Haven, 1 head.
- 32"x36"x20' Woodward Powell, 2 hds.
- 36"x36"x12' Bickett, hvy. duty, 2 hds.
- 36"x36"x12' Bickett, hvy. duty, 1 hd.
- 16"x16"x42' Walter Bros., 1 head.
- Two 28" Newton Plain index cents.

New York Machinery Exchange
50 Church Street, **NEW YORK**

We are now offering
some exceptional
Bargains in

**Automatic Millers
Duplex Millers
Die Sinkers
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which are all practically
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*The machines are right—
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"SIMMONS"

LATHES

- 7-24"x10' American High Duty, Geared Head.
- 1-24"x18' LeBlond Heavy Duty Engine Lathe.
- 8-27"x18' LeBlond Heavy Duty, Q. C. G., with motor.
- 7-27"x24' LeBlond Heavy Duty, D. B. G., Q. C. G., (NEW).
- 4-30"x12' High Duty American. Geared Head, motor drive, with motor.
- 1-36"x14' Putnam All-Geared Head Lathe.
- 1-36"x18' Putnam Heavy Duty, Triple Geared Lathe.
- 6-36"x34' Bridgeport Geared Head, Q. C. G., (NEW).
- 1-42"x20' Niles-Bement-Pond, Heavy Duty, Triple Geared.
- 8-48"x29'-56' Niles-Bement-Pond, Motor Drive, (NEW).
- 4-60"x29'-56' Niles-Bement-Pond, Motor Drive, (NEW).

PLANERS

- | | |
|---|--|
| <ul style="list-style-type: none"> 1-60"x60"x20' Woodward-Powell, 4 heads, 35 h. p. Motor Rev. 1-48"x48"x29' Ridgeway High-duty, 4 heads. 1-42"x42"x12' Openside Simmons Planer, 2 heads, (NEW). | <ul style="list-style-type: none"> 1-48"x48"x28' Cin'ti, 2 hds, NEW. 1-36"x36"x20' Woodward-P., 4 hds. 1-30"x30"x8' Cincinnati, 1 head. 1-30"x30"x18' Cincinnati, 2 heads. 1-24"x24"x12' American, 2 heads. 1-24"x24"x8' Cin'ti, 1 head on rail. |
|---|--|

BORING MILLS

- 1-10' Betts Vertical Mill, 15 h. p., Var. Speed Motor.
- 1-12' Bement Extra Heavy Boring-Turning Mill, two swivel heads.
- 1-34' Bertram Vertical Turret Head Boring Mill.
- 1-36' Bullard New Era Type Vertical, Cutting Lub. System.
- 1-24' Bullard New Era Type Turret Lathe.
- 1-No. 31 Lucas Precision Horizontal Mill.

RADIAL DRILLS

- | | |
|---|---|
| <ul style="list-style-type: none"> 2-6' Reed-Prentice Plain Radial, one with tapping attachment. 1-4' Hammond High Speed Radial. 1-8' Fosdick Full Universal Radial. | <ul style="list-style-type: none"> 1-4' Prentice Plain Radial. 3-No 310 Baker Heavy Duty Drills, 24" Capacity in steel. |
|---|---|

MILLERS

- 1-No. 2 Hendey Universal Miller.
- 8-No. 3-S Cincinnati Geared Head Universal.
- 5-No. 3 Cincinnati Heavy Duty Geared Head Vertical.
- 1-No. 4 Cincinnati High Duty Vertical.
- 1-Pratt-Whitney Heavy Duty Slab Miller.

MISCELLANEOUS

- | | |
|---|--|
| <ul style="list-style-type: none"> 1-New 5-Ton Pawling & Harnischfeger Crane, 38' span. 1-No. 0 Photostat complete with Engineering Copyboard, and Eastman Timer. 42" Bertsch Gap Square Shear. No. 6 Leffler Incluable O. B. Pr. No. 2-B Standard Pwr. Press, New. 16" Milwaukee b. g. shaper. 8" Saunders, No. 64 M. Pipe Mchs. 1-250-Ton Southwark Hydraul. Pr. 1-14"x96" Norton Plain Grinder NEW. | <ul style="list-style-type: none"> 2-36" Fellows Gear Shapers. 8-32" Cincinnati High Duty Shapers, NEW. 3-New Linderman Univ. Mch. Tool Lathe, Shaper, Miller, Drill, combined. No. 13 Natco Multiple spindle drill. |
|---|--|

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801 Singer Bldg., N. Y., 86-88 Exchange St., Buffalo, N. Y.

Harris Brothers Co.

1475 W. 35th St., Chicago, Ill.

3 STEP CONE, DOUBLE BACK GEARED, FULL QUICK CHANGE

33x14 LeBlond 7' centers
24x10 Whitcomb-Blaisdell 4' centers
20x 8 American Tool Wks. 4' centers

4 and 5 STEP CONE, SINGLE BACK GEARED, STANDARD

38x18 New Haven 13' centers
34x17 Pond 11' centers
30x30 Pond 24' centers
27x10 Lodge & Davis 5' centers
With taper attachment.

ENGINE LATHES, TRIPLE GEARED, SCREW CUTTING

96x37 Fifeild 27' centers
68x40 Pond 30' centers
60x40 Fifeild, (99% new) 30' centers
with 2 carriages on bed (2) machines.
42x24 Niles 18' centers
36x32 American Tool Works 25' centers
with 2 carriages on bed, compound rests. Have power
angular feed, quick change, nearly new. (3 Machines).
36x32 LeBlond, 25' centers
with 2 carriages on bed, compound rests, taper attach-
ment, quick change, nearly new. (2 machines).

MILLING MACHINES

C. R. 226 HENDEY No. 24 Milling
Mches. Table 11"x30", (Automatic
Feed 20") 20 Machines, \$150 each.
C. R. 99 BECKER No. 7 H. Milling
Mches. Table 9"x29", (Automatic
Feed 20") 250 Machines, \$150 each.
C. R. 241 BECKER No. 6 Latest Im-
proved Model Single Pulley Drive
(All geared Speeds) Table 61"x18"
(Automatic Feeds 62x20x26").
C. R. 240 BECKER No. 5 C Latest
Improved Model Single Pulley
Drive (All Grd. Spds.) Tbl. 56x14"
(Auto. Fds.) 54x16x14" 2 Machines

C. R. 89 SMITH No. 6 Hand Milling
Machines Table 20"x4" (Feeds
16"x6"x13") 20 Mches. \$100 each.
C. R. 229 BECKER No. 5 Table
48x13" (Auto. Feeds 40"x15"x12").
C. R. 236 BROWN & SHARPE
No. 3 Table 60"x16" (Automatic
Feeds, 34"x16"x14").
C. R. 228 NEWTON No. 1 with
Automatic Revolving Rotary Tbl.
22" dia. (Auto. Fds. 20"x12"x12")
Swings work 32" dia.
C. R. 227 GARVIN No. 22 Table
40"x9" (Feeds 24"x8"x18").

TURRET LATHES

24" Gisholt with 4-way turret tool
post on carriage, tilted hex. turret
on bed with power rapid traverse
—taper att., triple grd., pan bed
pump—64" hole in spindle (10 ma-
chines) latest model.
21" swing same, 34" hole in spdl. (2).

PNEUMATIC TOOLS

Hanna Compression Riveter, 15"
Reach, 10" Gap, Capacity 14".
1000 Pneumatic Chipping Rivet
Hammers and Air Drills.

DRILL PRESSES

Meyers 10" bench sensitive.
Champion 20", stationary hd., sq.
base, wheel, lever & pwr. fd., bk. grd.
Colburn 23" (No. D-4) heavy duty,
high speed, single pulley drive,
compound table.
Foote-Burt vert. 2-spdl. adjustable
heavy model, 3" cap., also adapted
for cylinder boring.
Foote-Burt vert. 4-spdl.—same.
Barnes 42", sliding head, back grd.,
power feed, (all geared feeds).
Baush 8-sp. mult., circular hd., 20"
dia., will drill to the center of a
40" dia. circle.
Bickford Pl. Radial, tap. att., 5' arm.
Niles-Bement-Pond Co. Pl. Radial.

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100" Betts, 3 heads, like new.
76" Betts heavy, modern.
60" Niles-Bement-Pond, hvy., single pulley drive.
50" Bickford, standard, 2 heads, low price.

36" Bullard Vertical Turret.
8-24" Bullard Vertical Turret.
36" Horizontal Universal, belt driven.
4" Espen-Lucas Horiz., floor type.
3" Betts, Horizontal, knee type.
No. 31 Rochester, horiz., floor type.

DRILLING MACHINES

8' Niles Plain Radial.
6' Baush, Plain Radial, like new.
6' Bickford, Semi-Universal Radial.
4-28" Aurora Upright, s.h., b.g. (new).

D-2 Colburn heavy duty, upright.
5' Niles-Bement-Pond, motor driven.
4' Gang, gear box drive.
4' Niles semi-universal radial.

DRILLS—Multi-Spindle

6 spindle Baush, 1" capacity.
3 & 4 spindle Barnes, 20" gang.

2-sp. Foote-Burt heavy rail type.
4 & 6 spindle Rockford, auto. feed.

LATHES

60"x20" Fifeild, D. C. Motor Drive.
52"x22" New H., tr. grd., pulley dr.
60"x17" New Haven Pulley
38"x14" Putnam triple geared.
38"x12" Pond triple geared.
30"x21" Putnam, dbl. head, complete.
30"x12" Johnson.

28"x18" Johnson.
20"x8" & 10" American.
20"x5" Lodge & Shipley.
14"x6" Mulliner tool room.
14"x6" Monarch.
12"x5" P. & W.
10"x4" Seneca Falls.

MILLING MACHINES

9—No. 5C Becker Verticals, new.
No. 3 LeBlond, plain, high duty.
No. 5 Becker-Brainard Plain.
No. 2 Kempsmith Universal.
10"x8" Ingersoll Slab.

No. 25 Becker Plain.
No. 2 Hendey Norton Plain.
No. 19 Hendey Norton Universal.
31"x5" Newton Vertical Slab.

PLANERS

14"x84"x13" Sellers, 3 hds., belt dr.
10"x60"x18" Bement-Niles, 4 rail heads, 1 side head.
18"x48"x14" Powell, 4 heads, reversible motor drive, complete with electrical equipment.
30"x30"x10" Flather, 2 hds., belt dr.

48"x48"x16" Bement-Niles, 4 heads, belt driven.
42"x42"x12" Pond Machine Tool Co., 2 heads, belt driven.
36"x36"x12" Niles-Bement-Pond, 3 heads.
30"x30"x6" Gray, 3 heads, parallel dr.

PRESSES

No. 55 Adriance S. A.
No. 512 Elias, triple action.

No. 1 Farrel straight side, 8" stroke.
D. D. 4 Ferracute, D. A., roll feed.

SHAPERS

2-16" Newark, box table and vise.
4-15" Smith & Mills, box table and vise.

4-15" Hendey, box table and vise.
3-48" Morton, extra hvy., draw-cut.
18" Fitchburg, traveling head.

MISCELLANEOUS

10' Bement Boiler Plate Rolls.
18" Betts heavy type slotter.
12" New Haven Slotter.
Sellers heavy Punch, 2" capacity.

No. 126 Buffalo Slitting Shear (new)
10" Newton Slotter (new).
8" Jarecki pipe mch., dies, etc.
8" Curtis & C. pipe mch., dies, etc.

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- 4—Slightly used 12"x5" Reed Engine Lathes.
- 2—Slightly used 12"x5" Flather Engine Lathes.
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- 3—Slightly used 14"x6" Monarch Engine Lathes.
- 2—48"x26" Lodge & Shipley selective tri. geared head lathes, arr. motor drive, like new, very cheap.
- 1—48"x16" Ditto.
- 3—36"x14" Ditto.
- 1—30"x30"x8" C. A. Gray Planer, 1 head, excellent.
- 1—48"x60"x20" Cincinnati Planer, 4 heads.
- 1—48"x48"x16" Cincinnati Planer, 4 heads.
- 6—6x32 Norton Plain Grinders, overhead countershaft.
- 2—12x72 Ditto.
- 11—Pratt & Whitney No. 12 Profilers, A1.
- 1—60"x26" Niles, triple geared, cone drive.

The Empire Machinery Exchange Co., Inc.
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Grand Rapids Specials

Abrasive finishing mch., Type A, Blevney.

Broaching machine, No. 4 Burr.

Broaching machine, No. 2 J. N. LaPointe.

Compressor, 6x6 Curtis, dbl. cyl.

Cut-off mch., No. 4 Nutter-B.

Cut-off mch., 4-B Cochrane-B.

Drill, 20" Barnes, all-geared.

Drill, 6-sp. 14" Rockford gang.

Electric grinder, No. 1 Willey, tool post.

Grinder, No. 6 Bryant, chuck'g.

Grinder, Detroit centerless.

Hack saw, No. 7 Racine.

Hammer, H. C. Smith auto.

Lathe, 9x2¼ Sundstrand Mfg.

Lathe, 9x12 Porter-Cable.

Lathe, 16x7 Oliver, q. c. g.

Lathe, 18x8 S. B. & E., q. c. g.

Lathe, 24x10 S. B. & E., stand'd.

Marking mch., No. 3 Slate.

Miller, No. 2½ Rockford h. pwr.

Miller, No. 2 Owen plain.

Miller, No. 2-H Becker vert.

Miller, 4" P. & W. spline.

Planer, 30"x30"x8" Pond.

Punch, mult., No. 3 Kane & R.

Press, No. 34 Consolidated, arch.

Press, No. 164 Consolidated.

Radial drill, 3" Dreses.

Radial drill, 3" Fostick.

Riveter, 4" Shuster.

Sand blast, Type A-6 Pangborn.

Scrap compressor, No. 10 Economy standard.

Screw machine, 2" Cleveland.

Shear, squaring, 96" Ohl, 16 ga.

Turret lathe, No. 3 B. & O.

Turret lathe, No. 5 Foster.

Turret lathe, 14" Warner & S.

Wire weaving mch., S. & K.

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"Everything in Shop Equipment" Grand Rapids, Mich.

Back to Lower Prices

In keeping with the spirit of the times and in an endeavor to get back to normal quickly, we are offering our entire stock of used machines and many new tools at sacrifice prices. Do not ask us for a list but specify exactly what you want and we will quote you by return mail, or wire, if necessary. The following are a few Machines picked at random from our stock:

LATHES

9" to 13" Barnes, h. s., cp. r., new.
10"x5' Summit, nearly new, (5).
13x6' Willard, quick change.
13-15-16 and 18 O. & S., h.s., c.r., new.
16"x8' Columbus, new.

20"x10' Hamilton, double back gear.
24"x12' Fay & Scott.
25"x14' Schumacher & Boye.
30"x12' L. & S., agl. p. dr. grd. hd. new.
8"x60" Fitchburg L-Swing.

TURRET LATHES and SCREW MACHINES

24" Steinle, 6 1/2" hol. spdl., grd. hd.
1 1/2" Tilted turret hand screw mch.
2x24 & 3x36 J. & L., dbl. equipment.

No. 2 Warner & Swasey hol. hex.
Nos. 52 and 56 National Acme.
21" and 24" Gisholt.

SHAPERS

14" Niles, traveling head.
14" Smith & Mills, crank.
16" Barker, back geared crank.

24" Walcott, geared.
20" Smith & Mills, geared.
16" Springfield, crank, back grd.

PLANERS

24x24x 6' Gray.
24x24x 6' Pease.
36"x36"x12' Niles.
44x44x12' Pond, 4 heads.
48x48x16' Bement-Miles, 2 heads.

54x54x16' Sellers, 4 heads.
60x60x17' Betts, 2 heads.
60x60x20' Sellers, 4 heads.
66x66x20' New Haven, 2 heads.
84x84x32' Putnam, 4 heads.

PRESSES

No. 18 Bliss, open back inclinable.
No. 3-A Willard, inc., 1050 lbs.
No. 35 Niagara, Stiles type, (2).

No. 3 Robinson, 4300 lbs., o. b. i.
No. 6-A Willard 3400 lbs. inclinable.
No. 1 1/2 Robinson 1500 lbs. inc., (3).

DRILLS and RADIALS

Henry & Wright agl. spdl., high spd.
2 1/2" Canedy-Otto plain, new.
Sensitive 1, 2, 3, 4 and 6 spindle.

1 1/2" Avey high speed bench, (5).
24", 26", 28" and 32", sliding head.
3" Morris plain, gear box drive.

Six new standard makes 20" Drills, each \$111.50
Motors, 1 to 50 H. P., 3 ph., 220 v., G. E., New

MILLING MACHINES

No. 25 Becker plain, (3).
Ames Lincoln type, 10"x40" table.
No. 1 Kempsmith universal.
No. 3 Brainard, 30x7 table.

No. 1 1/2 H. & S. plain.
No. 2 H Brown & Sharpe plain.
Briggs type "A" high duty, 24x8 table.
No. 32 Kempsmith Lincoln type, (3).

GRINDERS

Nos. 1 & 78 W. & M. surface.
10x24 Norton plain.
Capital, internal, practically new.

Landis 10x24 universal.
No. 2 W. & P. 10x30 universal.
36" and 66" Yates plate.

MISCELLANEOUS

Band saws, metal, Klemm, (2).
Boring mill, Giddings & Lewis horiz.
Boring mill, 12", 2 swivel heads.
Compressors, 9x8 and 12x10, new.
Gear cutter, G. & E. 36".
Gear cutter, Whiton 36"x36" face.
Gear millers, Bilton No. 1, (5).
Hammers, 40 lb. Bradley, helve, (2).
Hammer, Toledo, 5,000 lb. fric. brd.
Oil groover, Garvin, nearly new.

Oil separator, Springfield.
Pipe machines, 2", 4", 6" & 12".
Polishing and buffing lathes, W. & P.,
3 ph. motor hd., 1 1/2" spdl., (4).
Pulley balancing mch., Defiance.
Pumps, Gould triplex, 6"x8" & 7"x5".
Punch & shears, 1 thru 1 1/2" throat.
Pyrometer, Brown 20000, 2-way.
Riveter, high speed, 1/2" capacity.
Shear, 5' Robinson, for 10 gauge.

Osborne & Sexton Machinery Co.
Columbus, Ohio

Branch Office: 1118 Lindsey Building, Dayton, O.

Largest Stock Machinery In St. Louis

LATHES

14"x 6' Walcott, q. c. g.
16"x 8' Walcott, q. c. g.
18"x 8' Monarch, q. c. g.
20"x 10' Walcott, q. c. g.
24"x 10' Fay & Scott.

25"x 10' Gisholt, type G, plain turning, b. g.
26"x 12' Walcott, q. c. g.
28"x 12' Wickes hvy. duty, q. c. g., with taper attachment.

MILLERS

No. 1B Fox, h. & power feed.
Becker No. 7 H Lincoln.
P. & W. 12" automatic.

No. 3B Owen pl., with vertical attachment & div. head.
No. 23 Fox, back geared.

DRILLS

Allen 4, 5, 6 spindle, h. sp.
No. 3 Baush 27-spindle.
American 3' sens. radial, tap. att.
Nos. 1 & 3 Barnes horiz. radial.

24" Mechanics, b. g., p. f.
24" Milwaukee, b. g., p. f.
30" Prentice, b. g., p. f.
30" Gould & E., b. g., p. f.

GRINDERS

8" Heald & Ray State, ring.
14" Besly ring grinder.
Wilmarth & Morman B. Pt., drill.

Woods No. 2½, cutter & tool.
No. 20 Safety E. W. Co., cap.
3x30"; motor driven.

MISCELLANEOUS

Brake, 8' No. 184 Chicago 10 ga., arranged for motor drive.
Furnace, melt'g., Steele-Harvey.
Hammers, 800 and 1200 lb.
Profilers, P. & W. 2-spindle.
Punch & Stake Riveter, No. 3
Hilles & J., 5' th., wt. 16000.

Punch, No. 20 Excelsior, ½ in ½".
Motors, 5, 10, 40, 50 h. p. G. E.
Presses, o. b. i., Loshbough-Jordan Nos. 1, 2, 3, 4.
Shear, 134 Lennox, rotary, ¾" cap.
Shear, alligator, No. 31 Excelsior, 1½" cap.

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Brown Machinery Co., 2323 N. Ninth St., St. Louis Mo.

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Money back if not satisfied

Lathes.

50—From 4 to 30 in. swing. New and Used.
1—3½x60 Lo-Swing.

Drills.

20—Upright, 12 to 28 in.
12—Multiple, 3 to 24 spindles.
6—Radials, 3 to 5 ft. Plain & Univ.

Grinders

20—Plain & Univ. All sizes—Also internal and external.

Milling Machines

15—Plain & Univ. All sizes.

Shapers

6—From 14-24" Friction & Crank.

Turret & Screw Machines

30—From ½ to 3 in. Screw Machines and from 10 to 24" Tur.

Shears—Rotary & Square

10—From 10 Ga. to 1 in. cap.

Miscellaneous

1—37" Niles Mill, 2 swivel heads.
1—50" Sellers Car Wheel Borer.
1—No. 2 Newton Keyseat Miller.
1—No. 1 Newton Keyseat Miller.
1—No. 3 B. & S. Gear Cutter.
3—Bolt & Pipe Mches. 1 to 3" cap.
3—Grant Riveters, 3/16" cap.
1—No. 3 Long & A. Tire Welder.

We have over 1000 machines in stock. Send us your inquiries.

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New Machinery For Sale

In Stock at Chicago and New York

Lathes

24"x13' Chard, q. c. g., d. b. g.	14"x 8' Cisco, q. c. g., d. b. g.
20"x11' Chard, q. c. g., d. b. g., (2).	6"x30" and 6"x36" Dalton bench.
20"x10' Wickes, q. c. g., d. b. g.	Full line, Rivett precision bench.
16"x6' Whitcomb-Blaisdell.	Full line Stark precision bench.

Drilling Machines

3' Wisconsin sensitive radial.	22 1/2" Cleveland upright.
32" Cleveland sliding head.	21" Cleveland upright.
28" Cleveland sliding head.	20" Canedy-Otto, upright.
25" Cleveland upright.	14" U. S.
22 1/2" Cleveland, upright.	Belt and motor driven bench.
23" Snyder upright.	Van Doru portable electric.

Boring and Drilling Machines

No. 9 Pawling & Harnischfeger.	No. 12 Pawling & Harnischfeger.
--------------------------------	---------------------------------

Milling Machines

Rockford plain and universal.	Burke bench.
Nos. 1-A, 1-B, 0-B and 2-B Fox plain.	U. S. No. 1, hand.

Grinders

No. 3 Modern universal.	Webster & Perks, No. 2 universal.
No. 1 Wilmarth & Morman univ.	No. 1 Norton cutter and tool.
Lafayette universal.	Grand Rapids drill—various sizes.
10"x32" Ott universal.	Partridge floor stands, (all sizes).
6"x6" Ott internal.	Strand electric, flexible shaft.
No. 103 Rivett internal.	Dumore, (all sizes).
No. 2 Reid surface.	

Shapers

24" Milwaukee.	16" Milwaukee.
20" Milwaukee.	7" Rhodes horizontal.

Hack Saws

Peerless, (all sizes).	6"x6" Economy.
6"x6" Starrett.	

Miscellaneous

Arbor presses, Atlas, all sizes.	Press, Lebanon, foot.
Buffing machine, Blount.	Shear, 18-H Lenox, throatless.
Filing machines, Nos. 2 & 3 Barry.	Tinners' rolls, Pexto.

USED MISCELLANEOUS

Cold Saw, No. 15 Lea Simplex.	Lathe, 24" Steidle turret.
Lathe, 14"x5' Drees Monitor. (2).	

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For Immediate Delivery

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No. 0 Giddings & Lewis Horizontal.
60" Bullard, 2 Plain Heads.

DRILLING MACHINES

20" Barnes B. G. Drill.
6' Gang Radial Drill.
6' Prentice Radial Drill.
No. 4 Avey 4 Spindle Drill.

GRINDERS

No. 12 Brown & Sharpe universal.
6"x32" Norton Grinder.
8"x40" Morse Grinder.
14"x50" Norton Grinder.

No. 8 Besly Disc Grinder.
Wisconsin Tool and Cutter.
Gisholt Tool Grinder.
Madison Cylinder Grinder.

LATHES

18"x 6' Flather, compound rest.
18"x10' Bradford, compound rest, double back gear.
32"x18' Bradford, compound rest.
20"x 8' Porter, compound rest.
Porter-Cable Mfg. Lathe.

MILLING MACHINES

No. 5 Hende, Lincoln type.
Taylor & Fenn vertical.
No. 18 Cincinnati plain.
No. 3-B Milwaukee plain.
No. 3 Becker vertical.

No. 13 Brown & Sharpe.
12" P. & W. automatic.
Type "A" Briggs.
No. 32 Kempsmith.

PLANERS

34"x24"x 6' Whitcomb-Blaisdell.
28"x26"x10' Whitcomb-Blaisdell.
30"x30"x 6' Pond.

SCREW MACHINES

No. 0 Brown & Sharpe, automatic chuck and wire feed.
No. 0 Foster, plain head, automatic chuck and wire feed.
No. 2 Foster, plain head, automatic chuck and wire feed.
No. 1 Pratt & Whitney, automatic chuck and wire feed.
No. 1 Bardons & Oliver, plain head, automatic chuck and wire feed.

TURRET LATHES

24" Gisholt.
2"x24" Jones & Lamson.
Potter & Johnston.
14" Warner & Swasey.

PRESSES

No. 6 Eames Arbor Press.
No. 2-A Bliss Double Crank Geared Press.
No. 19 Bliss, o. b. i.
No. 3 Geier Straightening Press.

Stocker-Rumely-Wachs Company

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BORING MILLS.

- 10-16' Betts, double head.
- 7-10' Betts, double head.
- 60" Rogers, double head.
- 50" Bullard, double head.
- 42" King, double head.
- 36" Bullard, "New Era".

TRIPLE GEARED LATHES

- 50"x60' Johnson, ext. heavy. pat.
- 50"x30' Johnson, ext. heavy pat.
- 48"x134' American Tool Wks., latest quick change.
- 26-48"x22' double spindle, McCabe triple geared, geared face plate.
- 26-48"x36' double spindle, McCabe.
- 36"x14' Bridgeford, grd. hd. mtr. dr.

DRIVING WHEEL LATHE

- 80" swing, with quartering attach., Bement Double Head.

TURRET LATHES & SCREW MCHES.

- 20" swing, Pond, rigid type.
- 21" swing, Gisholt, gap.
- 3x36" Jones & Lamson, grd. hd.
- 2x24" Jones & Lamson, grd. hd.
- 8-4" Cleveland, Model-A, automatic.
- 2-4"-34" Cleveland, Model-A, auto.

PLANERS

- 72"x72"x20' Cincinnati 2 heads.
- 48"x48"x16' Wm. Sellers, 2 hds.
- 48"x48"x14' Pond M. T. Co. 2 hds.
- 30"x30"x8' Cincinnati, 1 hd., latest.
- 30' Cleveland Plate planer, motor dr.

HORIZONTAL BORING AND DRILLING MCHS.—"Knee Type"

- 4-8" bar, Niles, 64" swing, power raise to table.
- 4-8" bar, B.-M., 62" sw., pwr. raise.
- 4-8" bar, B.-M., 63" sw., pwr. raise.
- 3" bar, Bement, power raise.

RADIAL DRILLS

- 8' Dreses, plain.
- 7' Baush, plain.
- 6' American, plain.
- 5' Dreses cone drive.
- 4' Dreses cone drive.
- 4' Cincinnati-Bickford, sp. box dr.
- 4' American, Plain.

LO-SWING LATHE

- 3-4x60 Fitchburg, complete equip. Like new.

MILLING MACHINES

- No. 3-B. Milwaukee, universal.
- No. 3-A. B. & S., universal.
- No. 3-H. LeBlond, universal.
- No. 2 B. & S., universal.
- No. 2 Kempsmith, univ. vert. attach.
- No. 5 B. & S. vert. circular a tch.
- No. 2 Cincinnati, Vertical.
- No. 3 Cin'ti, Plain, table 45x12".
- No. 22 Becker Brainerd, tbl. 48x14".
- Newton, 60x12" horizontal.
- No. 7 Becker-Brainerd, Mfrs. style.
- No. 5 Hendey, q. c., Mfrs. style.

SLOTTERS

- 24" Niles-Bement-Pond (like new), complete with motor.

GEAR CUTTERS

- 22" Gleason, Bevel Gear.
- 30" Gould & E. spur and bevel.
- 36" Fellows Gear Shaper.
- 26" No. 3 B. & S. for spur.

BENDING ROLLS

- 16' Hilles & Jones, drop-end, balance bar type, arranged for motor drive.
- 10' 2" drop-end, balance bar type, (NEW) motor or belt drive.

GRINDERS

- Bridgeport, 60x12" takes 26" bet. centers, Plain Roll Grinder.
- Landis, Univ., 10" Sw. takes 30" cent.
- Iroquois univ., 12" sw., 36" centers.

NEW LATHES

- 36"x18' quick change, 11' centers.
- 32"x20', 13' centers, quick change.
- 29"x16', 10'-8" centers, quick change.
- 21" sw., 8-10-12-14' bed, quick chg.
- 18" sw., 8-10-12-14' bed, quick chg.
- 16" sw., 8-10-12-14' bed, quick chg.

NEW SHAPERS

- 12" and 16" Stroke.

NEW RADIAL DRILLS

- 24' and 4' arm, single pulley drive.

J. J. McCabe Lathe & Machinery Corp'n

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Armstrong-Blum Mfg. Co., 341 N. Francisco
Av., Chicago

Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H. 417 E. 51st., N. Y.
Lourie Mfg. Co., Springfield, Ill.
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Boring Bars

Mayhew Steel Products, Inc., 291 Broadway,
New York

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Boring Bars, Cylinder

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Boring, Drilling and Milling Machines, Horizontal

Barnes Co., W. F. & John, Rockford, Ill.
Beaman & Smith Co., Providence, R. I.
Carroll Fdry. & Mch. Tool Co., Bucyrus, Ohio
Simmons Machine Co., Albany, N. Y.

Boring Machines, Horizontal

Avey Drilling Machine Co., Cincinnati
Pedrick Tool & Machine Co., Philadelphia

Boring and Turning Machines, Vertical

Simmons Machine Co., Albany, N. Y.
Turner Machine Co., Danbury, Conn.

Breaching Machines

Simmons Machine Co., Albany, N. Y.

Case Hardening Compound

Buchanan Chemical Co., C. G., Cincinnati

Casters for Trucks

Hamilton Caster & Mfg. Co., Hamilton, Ohio

Centers, Index

Carter & Hakes Mch. Co., W. Winsted, Conn.
Fay & Scott, Dexter, Maine

Chains, Power Transmission

Cullman Wheel Co., 1344 Altgeld St., Chicago
Whitney Mfg. Co., Hartford, Conn.

Chasers

National Acme Co., Cleveland

Chucking Machines

New Britain Mch. Co., New Britain, Conn.

Chucks, Centering

McCroskey Tool Corporation, Meadville, Pa.

Chucks, Drill

Collis Company, The, Clinton, Iowa
Hartford Special Mch. Co., Hartford, Conn.
Jacobs Mfg. Co., Hartford, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
Weaver Mfg. Co., Springfield, Ill.

Chucks, Drill and Tap

Collis Company, The, Clinton, Iowa
McCroskey Tool Corporation, Meadville, Pa.
Peter Bros. Mfg. Co., Algonquin, Ill.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Keyway Cutting

Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Magnetic

Heald Machine Co., Worcester, Mass.

Chucks, Wrenchless

Thomas Elevator Co., 31 S. Hoyne Ave.,
Chicago

Clutches, Friction

Edgemont Machine Co., Dayton, Ohio

Cold Saws

Burke Machine Tool Co., Conneaut, Ohio
Cochrane-Bly Co., Rochester, N. Y.
Peter Bros. Mfg. Co., Algonquin, Ill.

Collets, Lathe and Screw Machine

Morrison Machine Products, Inc.,
Rochester, N. Y.

Couplings, Flexible

Cooper Flexible Transmission Co., Inc.,
Brooklyn

Cranes, Hand Power

Weaver Mfg. Co., Springfield, Ill.

Cranes, Portable

Canton Foundry & Mch. Co., Canton, Ohio
Weaver Mfg. Co., Springfield, Ill.

Crank Pin Turning Machine

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Classified Finding Index

Cutters, Adjustable

McCroskey Tool Corporation, Meadville, Pa.

Cutters, Keyseating

Scully-Jones & Co., Ry. Exch. Bldg., Chicago
Whitney Mfg. Co., Hartford, Conn.

Cutters, Milling

Whitney Mfg., Co., Hartford, Conn.

Cutting-Off Machines

Etna Mfg. Co., Toledo, Ohio
Peter Bros. Mfg. Co., Algonquin, Ill.

Cylinder Boring Machines, Portable

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B. Philadelphia

Cylinder Grinders

B. L. Schmidt Co., Davenport, Iowa

Cylinder or Dome Facing Machines

Underwood Corp., H. B., Philadelphia

Detectors

Bennett Metal Treating Co., Elmwood, Conn.

Die Heads, Self-Opening

National Acme Company, Cleveland

Dies, Pipe Threading

Hignall & Keeler Mch. Wks., Edwardsville, Ill.

Dies, Screw and Thread Cutting

National Acme Company, Cleveland

Dies, Self-Opening Adjustable

Rickert-Shafer Co., Erie, Pa.

Dogs, Machine

Mayhew Steel Products, Inc., 201 Broadway,
New York

Drilling Machine Heads

Nelson-Blanch Mfg. Co., Detroit, Mich.
United States Drill Head Co., Cincinnati

Drilling Machines, Bench

Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Burke Machine Tool Co., Connecticut, Ohio
Reed Co., Francis, Worcester, Mass.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Multiple Spindle

Avey Drilling Machine Co., Cincinnati
National Acme Company, Cleveland
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Post

Muesler Machine Tool Co., Cincinnati

Drilling Machines, Radial

Muesler Machine Tool Co., Cincinnati
Taylor & Fenn Co., Hartford, Conn.
Sipp Machine Co., Paterson, N. J.

Drilling Machines, Sensitive

Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Burke Machine Tool Co., Connecticut, Ohio
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.
Wisconsin Electric Co., Racine, Wis.

Drilling, Milling and Boring Machines, Vertical

Aurora Tool Works, Aurora, Ind.

Drilling Machines, Vertical

Aurora Tool Works, Aurora, Ind.
Avey Drilling Machine Co., Cincinnati
Barnes Co., W. F. & John, Rockford, Ill.
Hinckley Machine Works, Hinchley, Ill.
Richards Machine Co., Milwaukee, Wis.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling and Tapping Attachments

Aurora Tool Works, Aurora, Ind.
Barnes Co., W. F. & John, Rockford, Ill.
Krag & Co., E. L., 50 W. Randolph, Chicago
McCroskey Tool Corporation, Meadville, Pa.
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Turner Machine Co., Danbury, Conn.

Drills, Portable Electric

Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W.
Jackson Blvd., Chicago
Wisconsin Electric Co., Racine, Wis.

Dust Handling Equipment

Klickerbocker Co., Jackson, Mich.

Emery Stands

Blount Co., J. G., Everett, Mass.
Marschke Mfg. Co., Inc., Indianapolis, Ind.

Emery Wheel Dressers and Cutters

Taylor & Fenn Co., Hartford, Conn.

Facing Heads, Automatic

Mummet-Dixon Co., Hanover, Pa.

Feeders, Oil and Soda Water

New Britain Machine Co., New Britain, Conn.

Filing Machines

Johnson & Biddle Tool Co., Elkhart, Ind.

Filing and Sawing Machines

Johnson & Biddle Tool Co., Elkhart, Ind.

Forgings, Hollow Bored

American Hollow Boring Co., Erie, Pa.

Furnaces

Bennett Metal Treating Co., Elmwood, Conn.

Furniture, Machine Shop

New Britain Machine Co., New Britain, Conn.

Gauges, Taper

Hartford Special Mch. Co., Hartford, Conn.
Way Co., A. F., Hartford, Conn.

Grinding Machines, Bench

Blount Co., J. G., Everett, Mass.
Hisey-Wolf Machine Co., Cincinnati

Classified Finding Index

Grinding Machines, Cutter, Reamer and Tool

Bibout Co., J. G., Everett, Mass.
 Manhattan Machine & Tool Works., Grand Rapids, Mich.
 Marschke Mfg. Co., Inc., Indianapolis, Ind.
 Mummert-Dixon Co., Hanover, Pa.
 National Acme Co., Cleveland
 Simmons Machine Co., Albany, N. Y.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Cylinder

Heald Machine Co., Worcester, Mass.
 Schmidt Co., B. L., Davenport, Iowa
 Whitney & Son, Baxter D., Winchendon, Mass.

Grinding Machines, Cylindrical

Manhattan Machine & Tool Works., Grand Rapids, Mich.
 Ott Grinder Co., Indianapolis, Ind.
 Schmidt Co., B. L., Davenport, Iowa
 Simmons Machine Co., Albany, N. Y.
 Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Die

Manhattan Machine & Tool Works., Grand Rapids, Mich.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Drill

Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Face

Marschke Mfg. Co., Inc., Indianapolis, Ind.
 Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Internal

Heald Machine Co., Worcester, Mass.
 Ott Grinder Co., Indianapolis, Ind.
 Schmidt Co., B. L., Davenport, Iowa.
 Taylor & Fenn Co., Hartford, Conn.
 Thompson Grinder Co., Springfield, Ohio
 Whitney & Son, Baxter D., Winchendon, Mass.
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Oilstone

Mummert-Dixon Co., Hanover, Pa.

Grinding Machines, Portable

Hisey-Wolf Machine Co., Cincinnati
 Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
 Marschke Mfg. Co., Inc., Indianapolis, Ind.
 Mummert-Dixon Co., Hanover, Pa.
 Wisconsin Electric Co., Racine, Wis.

Grinding Machines, Sogging

Manhattan Machine & Tool Works., Grand Rapids, Mich.
 Marschke Mfg. Co., Inc., Indianapolis, Ind.

Grinding Machines, Surface

Heald Machine Co., Worcester, Mass.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Universal

Ott Grinder Co., Indianapolis, Ind.
 Simmons Machine Co., Albany, N. Y.
 Thompson Grinder Co., Springfield, Ohio
 Wilmarth & Morman Co., Grand Rapids, Mich.

Hack Saw Blades

Peerless Machine Co., Racine, Wis.

Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
 Peerless Machine Co., Racine, Wis.
 Racine Tool & Machine Co., Racine, Wis.

Hammers, Air

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago

Hammers, Belt & Motor Driven

Beaudry & Co., Boston
 United Hammer Co., Boston

Hammers, Power

Beaudry & Co., Boston
 Quickwork Co., St. Marys, Ohio
 United Hammer Co., Boston

Hammers, Riveting

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
 Quickwork Co., St. Marys, Ohio

Heads, Dividing

Simmons Machine Co., Albany, N. Y.
 Willard-Middletown Machine Co., Cincinnati

Hoists, Electric

Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
 Weaver Mfg. Co., Springfield, Ill.

Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio

Jigs, Fixtures, Tools, Etc.

Hartford Special Mch. Co., Hartford, Conn.
 Hinchley Machine Works, Hinchley, Ill.
 Kray & Co., E. L., 50 W. Randolph, Chicago
 Way Co., A. F., Hartford, Conn.

Joints, Universal

Cooper Flexible Transmission Co., Inc., Hiram, Minn.

Keyseating Machines

Bucher-Smith Co., East Liverpool, Ohio
 Chattanooga Mch. Co., Chattanooga, Tenn.
 National Machine Tool Co., Cincinnati
 Whitney Mfg. Co., Hartford, Conn.

Lathe Accessories and Attachments

Fay & Scott, Dexter, Maine
 McCroskey Tool Corporation, Mendville, Pa.
 Simmons Machine Co., Albany, N. Y.

Lathes, Automatic

National Acme Company, Cleveland

Classified Finding Index

Lathes, Bench

Blount Co., J. G., Everett, Mass.

Lathes, Engine

Barnes Co., W. F. & John, Rockford, Ill.
Fay & Scott, Dexter, Maine
Muciller Machine Tool Co., Cincinnati

Lathes, Foot Power

Barnes Co., W. F. & John, Rockford, Ill.

Lathes, Speed and Hand

Blount Co., J. G., Everett, Mass.

Lockers, Shelving and Cupboards, Steel

Terrell's Equipment Co., Grand Rapids, Mich.

Mandrels, Expanding

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Mandrels, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Measuring Devices

Van Keuren Co., The, Boston

Metal Cutting Machines, Sheet

Quickwork Co., St. Marys, Ohio
Way Co., A. F., Hartford, Conn.

Milling Attachments

Burke Machine Tool Co., Conneaut, Ohio
Hinckley Machine Works, Hinckley, Ill.
Willard-Middletown Machine Co., Cincinnati

Milling Machines, Bench

Burke Machine Tool Co., Conneaut, Ohio
Carter & Hakes Mch. Co., W. Winsted, Conn.
Simmons Machine Co., Albany, N. Y.

Milling Machines, Hand

Burke Machine Tool Co., Conneaut, Ohio
Carter & Hakes Mch. Co., W. Winsted, Conn.
Whitney Mfg. Co., Hartford, Conn.

Milling Machines, Horizontal

Heaman & Smith Co., Providence, R. I.

Milling Machines, Plain

Heaman & Smith Co., Providence, R. I.
Burke Machine Tool Co., Conneaut, Ohio

Milling Machines, Portable

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Milling Machines, Vertical

Heaman & Smith Co., Providence, R. I.
Burke Machine Tool Co., Conneaut, Ohio
Taylor & Fenn Co., Hartford, Conn.

Motors, Electric

Reliance Electric & Eng. Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Oil Cups

Gits Bros. Mfg. Co., 1940 S. Kilbourn Av.,
Chicago
Tucker, W. C. & F. O., Hartford, Conn.

Oil Extractors

Curtis, Albert B., Eatons, Worcester, Mass.

Oil Hole Covers

General Screw Co., Cincinnati, Ohio
Tucker, W. C. & F. O., Hartford, Conn.

Pattern Shop Machinery

Towaley Mfg. Co., John T., Cincinnati

Pipe Bending Machines

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Pipe Cutting and Threading Machines

Bignall & Keeler Mch. Wks., Edwardsville, Ill.
Simmons Machine Co., Albany, N. Y.

Piston and Piston Ring Machines

National Acme Company, Cleveland.

Planer Attachment, Radius

Underwood Corp., H. B., Philadelphia

Planer Attachment, Slotting

Moore Co., H. A., Rochester, N. Y.

Planer Tools, Circular

Underwood Corp., H. B., Philadelphia

Planers, Valve Seat, Portable

Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Polishing and Buffing Machines

Blount Co., J. G., Everett, Mass.
Hasey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W.
Jackson Blvd., Chicago
New Britain Machine Co., New Britain, Conn.
Wilmarth & Morman Co., Grand Rapids,
Wisconsin Electric Co., Racine, Wis. (Mich.)

Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.
Barnes Co., W. F. & John, Rockford, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Weaver Mfg. Co., Springfield, Ill.

Presses, Broaching

Atlas Press Co., Kalamazoo, Mich.
Laurie Mfg. Co., Springfield, Ill.

Presses, Foot

Atlas Press Co., Kalamazoo, Mich.
Rockford Iron Works, Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Classified Finding Index

Presses, Power

Hendley & Whittemore Co., Beloit, Wis.
Loeshbough-Jordan T. & M. Co., Elkhart, Ind.
Rockford Iron Works, Rockford, Ill.
Willard-Middletown Machine Co., Cincinnati

Presses, Punch

Lewthwaite Mcbe. Co., T. H., 417 E. 31st., N. Y.
Loeshbough-Jordan T. & M. Co., Elkhart, Ind.
Laurie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.

Presses, Screw

Atlas Press Co., Kalamazoo, Mich.
Barnes Co., W. F. & John, Rockford, Ill.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Towsley Mfg. Co., John T., Cincinnati
Weaver Mfg. Co., Springfield, Ill.

Presses, Power

Avery Drilling Machine Co., Cincinnati

Punch Press Feeds

Rockford Iron Works, Rockford, Ill.

Punch, Shear and Bender, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago

Punches, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mcbe. Co., T. H., 417 E. 31st St., New York
Whitney Metal Tool Co., Rockford, Ill.

Punches, Power

Hendley & Whittemore Co., Beloit, Wis.

Punches and Dies

Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mcbe. Co., T. H., 417 E. 31st., N. Y.
Rockford Iron Works, Rockford, Ill.

Quenching Baths

Bennett Metal Treating Co., Elmwood, Conn.

Racks, Bar Stock

New Britain Machine Co., New Britain, Conn.

Reamers, Adjustable

McCroskey Tool Corporation, Meadville, Pa.

Reamers, Cylinder

Hinckley Machine Works, Hinckley, Ill.
McCroskey Tool Corporation, Meadville, Pa.

Reamers, Solid

McCroskey Tool Corporation, Meadville, Pa.
Mayhew Steel Products, Inc., 291 Broadway, New York

Reels, Extension

Cincinnati Specialty Mfg. Co., Cincinnati

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Rad Cutters

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mcbe. Co., T. H., 417 E. 31st., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Scraping Machines, Hand & Pneumatic

Anderson Brothers Mfg. Co., Rockford, Ill.

Screw Driving Machines, Automatic

Reynolds Machine Co., Massillon, Ohio

Screw Driving Machines, Portable Electric

Hiney-Wolf Machine Co., Cincinnati

Screw Machines, Automatic

National Acme Company, Cleveland
New Britain Mcbe. Co., New Britain, Conn.

Screw Machines, Auxiliary

National Acme Company, Cleveland

Screws, Cap and Set

National Acme Company, Cleveland

Second-Hand Machinery Dealers

Allen Machinery Co., B. C., 551 W. Monroe St., Chicago
Bath & Co., Cyril J., Cleveland
Botwinik Brothers, New Haven, Conn.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Dale Machinery Co., Inc., 541 Washington Blvd., Chicago
Empire Machinery Exchange, Cleveland
Easley Machinery Co., E. L., 555 Washington Blvd., Chicago
Graves Mch. Exch. 50 Church St., New York
Harris Bros. Co., W. 35th & Iron, Chicago
Hill, Clarke & Co., 649 W. Washington Blvd., Chicago
Johnson & Sons Machinery, Co., Wm. C., St. Louis, Mo.
Jones Machine Tool Co., Cincinnati
Little Co., W. F., Cleveland
McCabe Lathe & Machinery Corp., J. J., 149 Broadway, New York
McDonald Machinery Co., St. Louis
McMullen Mch. Co., Grand Rapids, Mich.
Mid-West Machine Tool & Supply Company, Davenport, Iowa
Molitor Mch. Co., Chas., 124 S. Clinton St., Chicago
Mott & Merryweather Mch. Co., Cleveland
National Mch. Sales Co., 28 N. Desplaines St., Chicago
New York Mch. Exchange, 50 Church St., New York
Niles-Bement-Pond Co., 111 Broadway, N. Y.
Norton Bros. Machinery Co., Cincinnati
O'Brien Machinery Co., Philadelphia
Osborne & Sexton Mch. Co., Columbus, O.
Parker Co., Frank H., 1st National Bank Bldg., Chicago
Pattison Supply Co., W. M., Cleveland
Randle Machinery Co., Cincinnati
Reliance Mch. Sales Co., Pittsburgh, Pa.
Russell Machine Co., Pittsburgh, Pa.
Simmons Machine Co., Albany, N. Y.
Stocker-Rumely-Wachs Co., 117 N. Jefferson St., Chicago
Stoehr Mch. Co., A. M., 844 N. Wells St., Chicago
Strong, Carlisle & Hammond Co., Cleveland
Toomey, Inc., Frank, Philadelphia
Tubor, Velick & Co., Inc., Lake & Desplaines Sts., Chicago
Wayne Mch. Co., Fort Wayne, Ind.
Winterer, Herman L., Philadelphia
White Mch. Co., A. D., 108 N. Jefferson St., Chicago

Shafts, Flexible

Stow Flexible Shaft Co., Philadelphia

Classified Finding Index

Shafts, Steel

American Hollow Boring Co., Erie, Pa.

Shaper Attachment

Moore Co., H. A., Rochester, N. Y.

Shaping Machines

Columbia Machine Tool Co., Hamilton, Ohio
Osborne & Sexton Machy. Co., Columbus, O.
Simmons Machine Co., Albany, N. Y.
Smith & Mills Co., Cincinnati

Shears, Hand

Armstrong-Blum Mfg. Co. 341 N. Francisco

Hendley & Whittemore Co., Beloit, Wis.

T. H. Lawthwaite Machine Co., 417 E. 31st

Quickwork Co., St. Marys, Ohio

Tucker, W. C. & F. C., Hartford, Conn.

Whitney Metal Tool Co., Rockford, Ill.

Shears, Power

Hendley & Whittemore Co., Beloit, Wis.

Quickwork Co., St. Marys, Ohio

Sheet Metal Working Machinery

Quickwork Co., St. Marys, Ohio

Sine Bars

Way Co., A. F., Hartford, Conn.

Slotting Attachment for Planer and Shaper

Moore Co., H. A., Rochester, N. Y.

Spotting and Routing Attachments

Krag & Co., E. L., 60 W. Randolph, Chicago

Sprockets

Cullinan Wheel Co., 1344 Altgeld St., Chicago

Stock Supports

Way Co., A. F., Hartford, Conn.

Will-Burt Company, Orrville, Ohio

Straightening Machines

Towsley Mfg. Co., John T., Cincinnati

Whitney Metal Tool Co., Rockford, Ill.

Swaging Machines

Etna Mfg. Co., Toledo, Ohio

Tables, Circular

Hinckley Machine Works, Hinckley, Ill.

Tap Extractors

Walton Co., Hartford, Conn.

Tapping Machines and Attachments

Avey Drilling Machine Co., Cincinnati

Beaman & Smith Co., Providence, R. I.

Bicknell-Thomas Co., Greenfield, Mass.

Burke Machine Tool Co., Conneaut, Ohio

McCrosky Tool Corporation, Meadville, Pa.

Rickert-Shafer Co., Erie, Pa.

Turner Machine Co., Danbury, Conn.

Whitney Mfg. Co., Hartford, Conn.

Whitney Metal Tool Co., Rockford, Ill.

Taps and Dies

National Acme Company, Cleveland

Toledo Tap & Die Co., Toledo, Ohio

Threading Machines, Bolt and Stud

National Acme Company, Cleveland

Threading Tools

Armstrong Bros. Tool Co., 308 N. Francisco

Mayhew Steel Products, Inc., 291 Broadway,

National Acme Company, Cleveland

Tool Holders

Armstrong Bros. Tool Co., 308 N. Francisco

Mayhew Steel Products, Inc., 291 Broadway,

Simmons Economy Tool Corp., Albany, N. Y.

Tools, Boring

Armstrong Bros. Tool Co., 308 N. Francisco

Tools, Lathe and Planer

Armstrong Bros. Tool Co., 308 N. Francisco

Mayhew Steel Products, Inc., 291 Broadway,

Tools, Machinists'

Armstrong Bros. Tool Co., 308 N. Francisco

Trucks, Machine Shop

New Britain Machine Co., New Britain, Conn.

Towsley Mfg. Co., John T., Cincinnati

Turntables

Canton Foundry & Machine Co., Canton, O.

Turret Tool Posts

Fay & Scott, Dexter, Maine

Valve Grinders

Independent Pneumatic Tool Co., 600 W.

Valves

Powell Co., Wm., Cincinnati

Valve Seat Planing Machines, Portable

Underwood Corp., H. B., Philadelphia

Vises, Drilling Machine

Armstrong-Blum Mfg. Co., 341 N. Francisco

Armstrong Bros. Tool Co., 308 N. Francisco

Carter & Hakes Mch. Co., W. Winsted, Conn.

Germanow-Simon Mch. Wks., Rochester, N. Y.

Thomas Elevator Co., 31 S. Hoyne Ave.,

Vises, Machinists'

New Britain Machine Co., New Britain, Conn.

Vises, Milling Machine

Carter & Hakes Mch. Co., W. Winsted, Conn.

Germanow-Simon Mch. Wks., Rochester, N. Y.

Hartford Special Mch. Co., Hartford, Conn.

Vises, Shaper

Columbia Machine Tool Co., Hamilton, Ohio

Wood Working Machinery

Hendley & Whittemore Co., Beloit, Wis.

New Britain Machine Co., New Britain, Conn.

Towsley Mfg. Co., John T., Cincinnati

Whitney & Son, Baxter D., Winchendon, Mass.

Index of Advertisers

A

Abbott Ball Co.....	26
Allen Machinery Co., B. C.....	82
American Hollow Boring Co.....	32
Anderson Bros. Mfg. Co.....	26
Armstrong-Blum Mfg. Co.....	61
Armstrong Bros. Tool Co.....	36
Atlas Press Co.....	58
Aurora Tool Works.....	17
Avey Drilling Machine Co.....	9

B

Barnes Co., W. F. & John.....	29
Bath & Co., Cyril J.....	83
Beaman & Smith Co.....	23
Beaudry & Co.....	58
Bennett Metal Treating Co.....	44
Bicknell-Thomas Co.....	10
Bignall & Keeler Mche. Works...	71
Blount Co., J. G.....	41
Botwinik Brothers.....	73
Braun, Chas. N.....	79
Brown Machinery Co.....	94
Brownell Machinery Co.....	80
Buchanan Chemical Co., C. G....	44
Bucher-Smith Co.....	50
Burke Machine Tool Co.....	12-68

C

Canton Foundry & Mche. Co....	42
Carroll Fdry. & Mche. Tool Co....	11
Carter & Hakes Machine Co....	69
Chattanooga Machinery Co.....	51
Cincinnati Specialty Mfg. Co.....	24
Collis Company, The.....	16
Columbia Machine Tool Co.....	34
Cooper Flexible Transmission Co., Inc.....	46
Cullman Wheel Co.....	48
Curtis, Albert B., Estate.....	30

D

Dale Machinery Co., Inc.....	95
------------------------------	----

E

Edgemont Machine Co.....	46
Empire Mchy. Exchange Co., Inc.	92

Esley Machinery Co., E. L.	84
Etna Manufacturing Co.....	59

F

Fay & Scott.....	32
------------------	----

G

General Screw Co.....	22
Gita Bros. Mfg. Co.....	22
Grant Mfg. & Machine Co.....	52
Graves Machinery Exchange.....	91

H

Hamilton Caster & Mfg. Co.....	64
Harris Brothers Co.....	90
Hartford Special Machinery Co...	36
Heald Machine Co.....	4
Hendley & Whittemore Co.....	57
Hill, Clarke & Co., of Chicago...	86
Hinckley Machine Works.....	69
Hisey-Wolf Machine Co.....	18-19

I

Independent Pneumatic Tool Co.	8
--------------------------------	---

J

Jacobs Manufacturing Co.....	7
Johnson & Biddle Tool Co.....	65
Johnson & Sons Mchy. Co., Wm. C.	74
Jones Machine Tool Co.....	84

K

Knickerbocker Co.....	47
Krag & Company, E. L.....	25
Kremer-Cummins Machine Co....	15

L

Lewthwaite Machine Co., T. H.	56
Little Co., W. P.....	80
Loshbough-Jordan T. & M. Co...	54
Lourie Mfg. Co.....	

M

McCabe Lathe & Machinery Corporation, J. J.....	97
McCrosky Tool Corporation.....	31
McDonald Machinery Company..	78

What we do with Hitchcock's Machine Tool List

The table below shows the circulation of Hitchcock's Machine Tool List by States, and incidentally how the users of iron working machinery are distributed. The figures given, except for steam and electric railways, and for a few hundred of the larger establishments in which by request copies are addressed to individuals especially concerned with the selection and purchase of tools, stand for the number of plants to which the Tool List is regularly mailed, and as these include manufacturers and shops of every kind in which machine tools are employed, the density of the market in any part of the country is clearly shown.

The circulation of the Machine Tool List in this respect is peculiar; there is no other like it, or anywhere near like it, because, under the present postal laws and regulations, a similarly complete distribution cannot be made by any other than a publication that is mailed free. This gives the Tool List service its distinctive value, and beyond question has been the prime factor in its success. No doubt other things have had their influence upon this result also, but the main reason why the Tool List has thrived is its ability to do for advertisers what no other publication can do—put their advertising messages across to the whole body of possible buyers, everywhere in the country.

Revised to July 1, 1921

Alabama	132	Nevada	5
Alaska	2	New Hampshire.....	111
Arizona	16	New Jersey.....	920
Arkansas	35	New Mexico.....	4
California.....	698	New York	3,236
Colorado	144	North Carolina	124
Connecticut	789	North Dakota.....	29
Delaware	48	Ohio	2,499
District of Columbia.....	51	Oklahoma.....	92
Florida	83	Oregon.....	191
Georgia	131	Pennsylvania.....	2,657
Idaho.....	16	Rhode Island.....	243
Illinois.....	1,911	South Carolina	54
Indiana.....	901	South Dakota.....	34
Iowa.....	384	Tennessee.....	190
Kansas	178	Texas	272
Kentucky.....	160	Utah	33
Louisiana.....	128	Vermont	78
Maine	187	Virginia.....	337
Maryland	302	Washington.....	196
Massachusetts	1,514	West Virginia	138
Michigan.....	1,300	Wisconsin.....	863
Minnesota.....	319	Wyoming.....	4
Mississippi.....	60	Steam Ry. Officials	1,390
Missouri.....	570	Elec. Ry. Officials	804
Montana	34	Technical Schools	212
Nebraska.....	107	Foreign.....	224
Total.....		25,140	

Index of Advertisers—Continued

McMullen Machinery Co.....	92	Richards Machine Co.....	14
Manhattan Mche. & Tool Works	39	Rickert-Shafer Co.....	5
Marchke Mfg. Co., Inc.....	38	Rockford Iron Works	56
Mayhew Steel Products, Inc.....	30	Russell Machine Co.....	62-77
Mid-West Machine Tool & Supply Co.....	84		
Molitor Machinery Co., Chas.....	85	S	
Moore Co., H. A.....	33	Schmidt Co., B. L.....	42
Motch & Merryweather Mchy. Company	88	Scully-Jones & Co.....	52
Mueller Machine Tool Co.....	28	Second-Hand Machinery.....	73 to 97
Mummert-Dixon Co.....	28	Simmons Economy Tool Corp'n.....	66
		Simmons Machine Co., Inc.....	89
N		Sipp Machine Co.....	13
National Acme Company	3	Smith & Mills Co.....	34
National Machine Tool Co.....	50	Stocker-Rumely-Wachs Co.....	96
National Machinery Sales Co.....	81	Stoehr Machinery Co., A. M.	80
Nelson-Blanch Mfg. Co.....	20	Strong, Carlisle & Hammond Co.	81
New Britain Machine Co.....	108		
New York Machinery Exchange..	87	T	
Nicholson & Co., W. H.....	37	Taylor & Fenn Co.....	55
Niles-Bement-Pond Co.....	75	Terrell's Equipment Co.....	53
Norton Bros. Machinery Co.....	73	Thomas Elevator Co.....	
		Thompson Grinder Co.....	43
O		Toledo Tap & Die Co.....	6
O'Brien Machinery Co.....	76	Toomey, Inc., Frank.....	82
Osborne & Sexton Mchy.Co.....	93	Towsley Mfg. Co., John T.....	63
Ott Grinder Co.....	38	Tubor, Velick & Co., Inc.....	76
		Tucker, W. C. & F. C.....	62
P		Turner Machine Co.....	14
Parker Company, Frank H.....	73		
Pattison Supply Co., W. M.....	74	U	
Pedrick Tool & Machine Co.....	27	Underwood Corporation, H. B....	72
Peerless Machine Co.....	59	United Hammer Co.....	
Peter Bros. Mfg. Co.....	10-65	United States Drill Head Co.....	21
Powell Co., The Wm.....	70		
Q		W	
Quickwork Co.....	60	Walton Co.....	8
		Way Co., A. F., Inc.....	85
R		Wayne Machinery Co.....	94
Racine Tool & Machine Co.....	60	Weaver Mfg. Co.....	35
Randle Machinery Co.....	82	White Machinery Co., A. D....	78
Ready Tool Co.....	30	Whitney Mfg. Co.....	49
Reed Co., Francis.....	20	Whitney Metal Tool Co.....	6
Reliance Elect. & Engineering Co.	2	Whitney & Son, Baxter D.....	40
Reliance Machinery Sales Co.....	73	Willard-Middletown Mche. Co.	54-68
Reynolds Machine Company.....	67	Will-Burt Company.....	24
		Wilmarth & Mormon Co.....	107
		Winterer, Herman L.....	79
		Wisconsin Electric Co.....	45

No. 1 Swivel Table Surface Grinder

(Hand Feed)



A small Precision Surface Grinder equipped with a swivel table to facilitate the grinding of angular or irregular shapes.

For Grinding Between Centers

Suitable T-slots accommodate head and tail stock for grinding between centers,—magnetic chuck or vise.

Ideal for grinding gauges and dies, bridge reamers and ship countersinks, salvaging milling cutters and on production work. Efficient trueing device dresses wheel without removing work "set-up" from table.

Write for illustrated literature

Wilmarth & Morman Co.

For 21 Years Manufacturers of Grinding Machinery

1185 Monroe Avenue, N. W., Grand Rapids, Michigan

More Comfort—More Work

Your men get the comfort and you get the extra work when "NEW BRITAIN" Adjustable Shop Stools are installed

With
Spring Back
If Desired



Fixed
or
Portable

When Abraham Lincoln was asked how long a man's legs should be, he is said to have replied: "long enough to reach the ground." Now, when a tall man is seated on a low stool his legs reach the ground too soon, while a short man perched on a high stool cannot make his feet arrive. Result—both are uncomfortable, but both will do more work on a stool easily adjustable to their respective heights--the "NEW BRITAIN."

*Our Bulletin 1204 will help you
decide for 1922—why postpone?*

The New Britain Machine Company

**"Shop Furniture
Originators"**



**New Britain,
Conn. U.S.A.**

